B6045-1
1/12/88

Metropolitan Life
AND AFFILIATED COMPANIES

STATISTICAL BULLETIN

Vol 69 No 1 Jan – Mar 1988

2 **Trends in Medical Care Costs**. An economic analysis of current patterns of medical services in the U.S.A.

9 **The Medical Care Cost Dilemma**. In this commentary, Robert H. Vatter, Vice-President and Economist at Met Life, discusses factors contributing to the high level of health care expenditures.

10 **Multiple Births: An Upward Trend in the United States**. A national view plus clues to the increasing frequency of these unusual birth events.

18 **Women's Longevity Advantage Declines**. An analysis of the narrowing life expectancy gap between the sexes.

24 **Variations in Mortality From Gastric Cancer**. New light on the geographical and socioeconomic differences in death rates from stomach cancer.

Contents

Statistical Bulletin Vol. 69, No. 1, Jan.–Mar. 1988

1 From the Editor's Desk
2 Trends in Medical Care Costs
9 Commentary: The Medical Care Cost Dilemma
Robert H. Vatter, Vice-President and Economist
Met Life Insurance Company
10 Multiple Births: An Upward Trend in the United States
16 Capsule Briefs
18 Women's Longevity Advantage Declines
24 Variations in Mortality From Gastric Cancer
31 Statistical Information, Please
Back Cover: Historical Perspectives

John J. Creedon
President and
Chief Executive Officer

Paul S. Entmacher, M.D.
Senior Vice-President and
Chief Medical Director

William R. Cunnick, Jr., M.D.
Vice-President and
Deputy Chief Medical Director

Doris Bressler
Director
Health and Safety Education

Charles B. Arnold, M.D., M.P.H.
Editor-in-Chief

Joan W. Parks
Managing Editor

Stanley Kranczer
Margaret Mushinski
Contributing Editors

Hazel Forbes
Assistant Contributing Editor

Ada Arieta
Editorial Assistant

Stanley Kranczer
Business Manager

Guru S. Bale, Ph.D.
John Sentowski
Technical Specialists

Corporate Health Strategies
Data Contributor

Paul Verga
Art Direction

Lawrence Studio, Inc.
Graphic Design

The Statistical Bulletin (ISSN 0741-9767) Copyright 1988 Metropolitan Life Insurance Company, One Madison Avenue, New York, NY 10010. Published four times a year by Metropolitan Life Insurance Company. John J. Creedon, President and Chief Executive Officer; Robert G. Schwartz, Chairman; Arthur G. Typermass, Senior Vice-President and Treasurer; Richard M. Blackwell, Vice-President and Secretary. Printed in U.S.A. Subscriptions: U.S., its territories and Canada, $50 for one year; libraries $40 (U.S. currency). Outside U.S. and Canada add $10 for postage and handling. Send to: Statistical Bulletin, PO Box 64025, Baltimore, MD 21264. Postage paid at New York, N.Y.

Postmaster: send address changes to Williams and Wilkins, 428 E. Preston St., Baltimore, MD 21202.

Letters will be published at the discretion of the editor as space permits and subject to editing and abridgment. They should be typewritten double-spaced. Send to:
Statistical Bulletin, 16UV
Metropolitan Life Insurance Company
One Madison Avenue, New York, NY 10010

From The Editor's Desk

What's the largest amount of money that you can comprehend? Whatever the figure, chances are it is smaller than the sum the United States currently spends annually on medical care — $458 billion. Even if we weren't patients during the year, the resources consumed by national medical care expenses directly affected us as taxpayers. We will also feel the impact indirectly when those expenses involve businesses' employees and may be passed along to us in higher prices.

Health Care Expenditures Still Escalating

In this issue of *SB*, an article by Joseph Vincenzino, Senior Economist in Metropolitan Life's Business Economics Department, may help you understand better where all those healthcare dollars went and some of the trends that brought them to their current level. In addition, the data analysis provides a worrisome indication that the lull in medical care inflation has ended, and further price rises are occurring.

In an accompanying commentary, Robert Vatter, Chief Economist for Metropolitan Life, reflects on the economic implications for the nation and on the potential these trends may have on future financing of medical care. The dollars and the complexity of this problem do seem staggering as one gains more perspective.

SB intends to continue to publish annually a summary of Metropolitan's review of U.S. medical care expenditures and trends. We hope our readers will watch for them in future issues.

Multiple Birth Trends

Did you know that multiple birth rates (that is, twins, triplets or even more) have been increasing in recent years? In 1985 the rate reached a 30-year high. In this issue, you can learn about these relatively unusual birth events, and some of the explanations for their greater frequency.

Which carries the greater health risk for a woman: pregnancy carried to full term or an induced abortion? Read *Capsule Briefs* in this issue for that answer, as well as other timely items.

A Look at Women's Life Expectancy

Women are the stronger sex, right? After all, as the argument goes, they have much lower mortality rates at every age. That line of reasoning still holds; however, it is growing weaker as a debating point, as explained in this issue's article on women's longevity.

A Cancer Prevention Success Story

In terms of total lives spared, what is the greatest cancer prevention success story of the twentieth century? If you answered "stomach cancer," you are correct. If you want to know more, turn to our article on the subject, which may shed some new light for you on this relatively unknown, remarkable and inexplicable public health event.

If you are contemplating childbearing, and want to approach the decision objectively, perhaps you will want to refer to *Statistical Information, Please* for the current estimated cost of raising a child to age 18 in the United States.

On that sobering note, I wish you good reading. □

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Trends in Medical Care Costs

In the past few years, considerable changes in the U.S. health care industry have taken place, brought on by spiraling medical care costs. Moreover, changes are likely to continue as government and business attempt to keep health care costs in check. The abatement of medical care inflation witnessed in recent years appears to have run its course for now. Therefore, efforts to control costs must focus on reducing and altering the pattern of utilization. These modifications will become increasingly important as the population grows older, further compounding the rising demand for medical resources. Under current and prospective conditions, consumer education will become more vital than ever.

National health care expenditures rose 8.4 percent in 1986, reaching $458 billion, and represented 10.8 percent of gross national product (GNP)—the total output of goods and services.

National health care expenditures rose 8.4 percent in 1986, reaching $458 billion, and represented 10.8 percent of gross national product (GNP)—the total output of goods and services. While the relative increase was slightly higher than in 1985, it still was the second lowest rise in the last two decades. As can be determined from Figure A, the efforts to restrain health care costs have resulted in a deceleration of expenditures in recent years. Notwithstanding, even at an 8 percent annual rate increase, medical care costs will likely continue to rise as a share of GNP. Available data indicate that national health expenditures totaled about $500 billion in 1987 and represented in excess of 11 percent of GNP. Over the next five years, projections reveal that expenditures will likely approach and/or surpass 12 percent.

Mounting costs have significantly altered the landscape of medical care delivery in the United States.

The Emergence of Prepaid Care

Mounting costs have significantly altered the landscape of medical care delivery in the United States. Out of necessity, employers have taken a much more active role in restructuring the health care system. The concept of diagnostic related groups (DRGs), brought to the forefront by Medicare's "prospective payment system," is becoming more widely used. Health maintenance organization or "HMO" enrollment has increased substantially. Currently, it is estimated that about 27 million Americans are members of HMOs, with some forecasts approaching 50 million members by the early 1990s. Whether or not this actually comes about, it is clear that HMOs will play a key role in altering the health care sector. Furthermore, the whole structure of prepaid programs is still in a state of evolution.

Currently, it is estimated that about 27 million Americans are members of HMOs, with some forecasts approaching 50 million members by the early 1990s.

The Effects of "High Tech"

Health care is more labor intensive than most other sectors of the economy, but new technology normally does not lend itself to the labor and cost-cutting benefits possible in other industries. In fact, it tends to require more workers per patient and additional skills. With much of the field still dominated by nonprofit organizations, inefficiencies can occur as the desire to take advantage of new technology overrides careful consideration of its need.

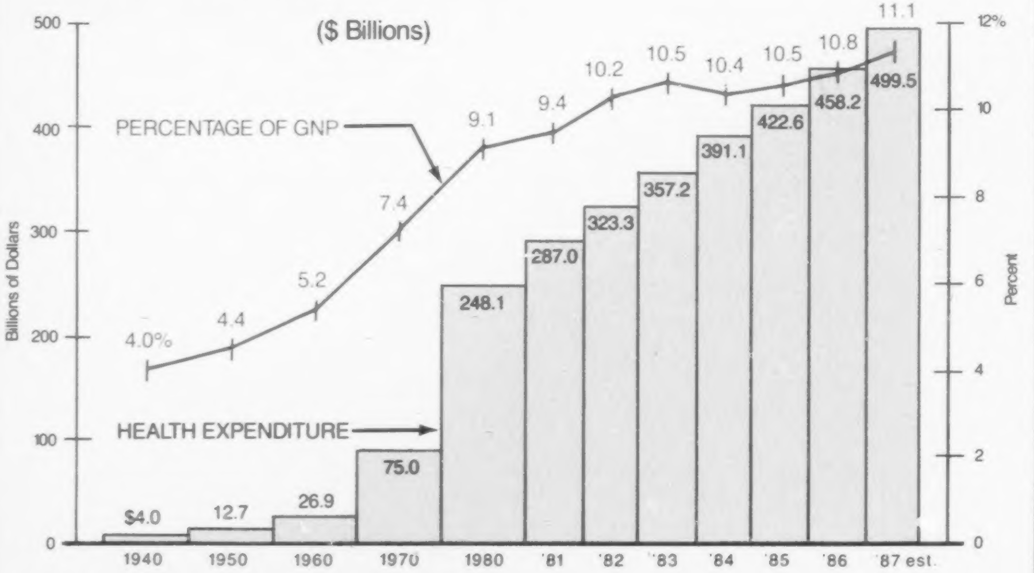
Medical technology continues to expand at a rapid rate, and as competition within the health sector increases, costs will begin to take on a more influential role in decision-making. While greater profit orientation of the industry raises concerns about the quality of care, it must be remembered that economic resources are limited, and unless decisions are made with this in mind, the quality of care may be more adversely affected. Another factor that distinguishes health care from other sectors is that a prevalence of public and private "third-party payers" obscures the true cost to the consumer.

The methods of financing health care expenditures changed somewhat in 1986, reflecting in part the increased use of cost containment measures. A recent survey of medium and large firms conducted by the Bureau of Labor Statistics revealed that, of the employees covered, 68 percent were affected by at least one cost containment feature.* The proportion of personal health expenditures accounted for by direct payments edged up to 29 percent in 1986 from 27 percent in 1983. While this compares with 32 percent in

---

*"Employee Benefits in Medium and Large Firms, 1986," U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2281, July 1987.

Figure A — National Health Expenditures United States, 1940 to 1987



Source: Health Care Financing Administration, Division of National Cost Estimates; U.S. Department of Commerce and Metropolitan Life Insurance Company, Business Economics Department.

1976 and more than 50 percent just before the onset of Medicare and Medicaid, the consumers' out-of-pocket expenses for medical care have begun to creep back up. Figure B graphically shows the percentage distribution of personal health care expenditures in 1986.

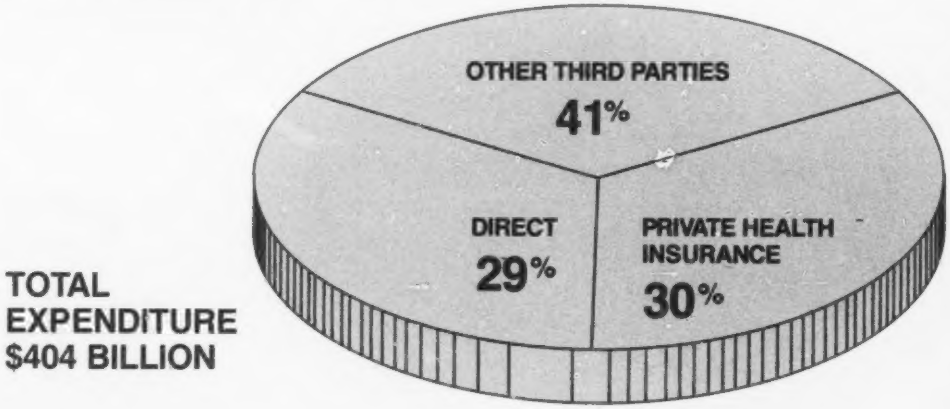
The Impact of Rising Prices

There has been a significant increase in American health care costs. Expenditures have risen because of several main factors, namely, climbing prices for medical care goods and services, a growing and aging population, and rising utilization. Price increases, by far, have been the largest contributor to higher costs, accounting for about two-thirds of the jump over the past 10 years. In addition to a growing population, the rising proportion of elderly, particularly those 75 and over, has put upward pressure on costs. Finally, a better educated population, changes in the method of health care delivery, rising income, demand generated by private health insurance and other third-party payers, advanced medical technology and more highly-skilled personnel have all contributed to greater utilization of medical care.

In 1986 Americans spent $404 billion on personal health care—8.8 percent above the previous year. This increase, while remaining substantially below the relative changes during the early 1980, was somewhat higher

> In 1986 Americans spent $404 billion on personal health care—8.8 percent above the previous year.

Figure B—Sources of Funds for Personal Health Care Expenditures United States, 1986



Source: Health Care Financing Administration, Division of National Cost Estimates.

Table 1 — Total Expenditures on Personal Health Care * United States, 1976 to 1986

($ Billion)

Year	Total Personal Health Care	Hospital Care	Physicians' Services	Dentists' Services	Other Prof'l. Services	Drugs & Medical Sundries	Eyeglasses and Appliances	Nursing Home Care	Other Health Services
1986	$404.0	$179.6	$92.0	$29.6	$14.1	$30.6	$8.2	$38.1	$11.9
1985	371.3	167.2	82.8	27.1	12.4	28.7	7.5	35.0	10.8
1984	341.9	156.3	75.4	24.6	10.9	26.5	7.0	31.7	9.4
1983	314.7	146.8	68.4	21.7	9.3	24.5	6.2	29.4	8.3
1982	286.5	135.2	61.8	19.5	8.0	22.1	5.8	26.7	7.4
1981	254.7	119.1	54.8	17.3	6.8	20.7	5.3	23.9	6.8
1980	219.7	101.6	46.8	15.4	5.7	18.8	5.1	20.4	5.9
1976	132.8	60.9	27.6	9.4	3.2	13.0	3.4	11.3	4.0
				Percent Change From Previous Year					
1986	8.8	7.4	11.1	9.2	11.9	6.6	9.3	8.9	10.2
1985	8.6	7.0	9.9	9.9	13.8	8.3	8.3	10.4	14.9
1984	8.6	6.5	10.1	13.3	17.1	8.4	12.0	7.8	13.2
1983	9.8	8.6	10.7	11.6	17.0	10.6	6.4	9.9	13.0
1982	12.5	13.5	12.8	12.5	16.9	6.9	9.4	12.0	9.2
1981	15.9	17.2	16.9	12.3	19.8	10.4	5.6	17.1	14.2
1980	15.8	16.8	16.4	15.7	19.9	9.5	7.8	17.1	15.4
1976	13.4	16.1	10.6	14.7	22.3	9.1	8.3	12.5	5.5
				Percent Distribution					
1986	100.0	44.5	22.3	7.3	3.5	7.6	2.0	9.4	2.9
1985	100.0	45.0	22.3	7.3	3.3	7.7	2.0	9.4	2.9
1984	100.0	45.7	22.1	7.2	3.2	7.8	2.0	9.3	2.7
1983	100.0	46.6	21.7	6.9	3.0	7.8	2.0	9.3	2.6
1982	100.0	47.2	21.6	6.8	2.8	7.3	2.0	9.3	2.6
1981	100.0	46.8	21.5	6.8	2.7	8.1	2.1	9.4	2.7
1980	100.0	46.2	21.3	7.0	2.6	8.6	2.3	9.3	2.7
1976	100.0	45.9	20.7	7.1	2.4	9.8	2.6	8.5	3.0

*Does not include outlays for research and construction, expenses for prepayment and administration, and government public health activities.

Note: Due to rounding, components may not add exactly to totals.

Source: U.S. Health Care Financing Administration, Division of National Cost Estimates.

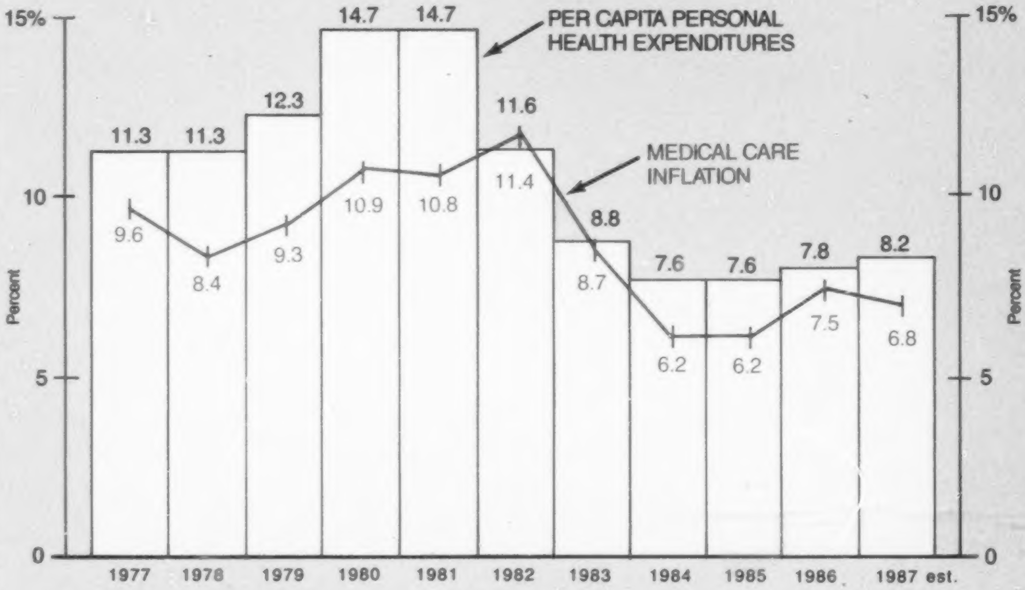
than that in the two previous years. The resumption of a slight acceleration in expenditures for hospital care continued in 1986, with a rise of 7.4 percent to almost $180 billion. Hospital care is the largest expenditure category in personal health care, accounting for around 45 percent of the total. Among the other major categories, physicians' services showed an acceleration in expenditure growth, with their share of total spending continuing to rise. While this in large part resulted from price increases, it may also be reflecting the increased enrollment in HMOs.

By contrast, spending for dental services continued to decelerate. Following a sharp double-digit increase in 1985, expenditures on nursing home care eased somewhat, but nevertheless rose by almost 9 percent. More important, the increasing segment of the population 75 years of age and over will put significant upward pressure on these costs in the future. This may be offset somewhat by increased reliance on home health care, and employees may begin to require elderly care in addition to child care facilities. Indications are that expenditures on personal health care continued to accelerate in 1987, totaling over $440 billion. Details of personal health expense by major categories over the past 10 years are shown in Table 1.

Price inflation is the major cause of health care expenditure increases. It is, therefore, heartening to note that in

Figure C — Trends in Medical Care Expenditures and Inflation United States, 1977–1987

(Annual Percent Change)



Source: Health Care Financing Administration, Division of National Cost Estimates; U.S. Bureau of Labor Statistics, and Metropolitan Life Insurance Company, Business Economics Department.

recent years there has been a significant moderation. Unfortunately, it is becoming increasingly evident that over the next several years it is unlikely there will be any further significant improvement. Population growth, which continues to be about one percent a year, accounts for a portion of the increase in medical care spending. On a per capita basis, which removes the impact of a rising population, expenditures on personal health care during 1986 rose to $1,620 or by 7.8 percent. This compares with a rise of 7.6 percent the year before and clearly marks an end to the downtrend witnessed between 1981 and 1985. A further uptick in the growth of per capita expenditures is expected when the 1987 figures are finalized. It appears that the aging of the population is offsetting whatever progress has occurred in reducing utilization in other areas. Figure C presents the trend in per capita medical care expenses and the changes in medical care prices during the past decade.

Medical Care Prices Versus CPI

During the post-World War II period, the rise in medical care prices generally has exceeded the increase in the overall Consumer Price Index (CPI). Inflation in the health care sector began to receive widespread attention from government, business and the general public, as skyrocketing expenditures for medical care put a drain on financial resources.

After moderating for several years, the rise in the medical care CPI accelerated during 1986. This was in sharp contrast to the movement in the overall CPI, and reignited widespread concerns over medical care inflation. In 1987 the increase in the medical care CPI receded somewhat on a year-over-year basis. Nevertheless, it remained near 7 percent, and it is unlikely to move much lower in the near future (see Table 2). While the gap between increasing medical care prices and the overall CPI narrowed in 1987, this primarily reflects a rise in the latter.

Hospital care is the largest item in the health care bill, and is, therefore, the area of most concern from the price standpoint. The rise in hospital room charges, as measured in the CPI, showed a relatively moderate increase of about 7 percent for 1987. This may be seen in Table 2. However, the sharp deceleration, which saw the increase go from 15.7 percent in 1982 to 5.9 percent in 1985, has come to an end. Ironically, some of this upward pressure may be reflecting the success of cost-containment measures to reduce admissions and length of stay. The rise in prices for physicians' services—the second largest expenditure category—rose by 7½ percent in 1987. In 1988 the medical care CPI is expected to show an increase similar to that of 1987, as some of the recent price pressures level off.

Table 2—Percent Change From Previous Year in Selected Items of Medical Care CPI United States, 1981 to 1986 With Projections to 1988

(Annual Averages)

Item	1981	1982	1983	1984	1985	1986	Estimate 1987	Forecast 1988
Prescription Drugs	11.4	11.7	10.9	9.6	9.5	8.6	**8.0**	**7.5**
Physicians' Services	11.0	9.4	7.7	7.0	5.8	7.2	**7.5**	**7.2**
Hospital Rooms	14.8	15.7	11.3	8.3	5.9	6.0	**7.2**	**6.8**
Dental Services	9.6	7.7	6.7	8.1	6.3	5.6	**6.8**	**7.2**
Medical Care: All Items	10.8	11.6	8.7	6.2	6.2	7.5	**6.8**	**6.8**
Total CPI	**10.4**	**6.1**	**3.2**	**4.3**	**3.6**	**1.9**	**3.7**	**4.2**

Source: U.S. Bureau of Labor Statistics and
Metropolitan Life Insurance Company, Business Economics Department.

Table 3—Percent Change* From Previous Year in Price of Medical Care Goods and Services by Region United States, 1983 to 1987

Year	Total Medical Care	Medical Care Commodities	Total Medical Care Services	Professional Services
Northeast				
1987	6.9	6.7	6.9	7.7
1986	8.0	6.6	8.4	7.9
1985	7.4	6.5	7.5	7.0
1984	7.9	7.2	8.1	9.5
1983	9.1	8.4	9.2	8.2
North Central				
1987	5.9	6.5	5.8	6.3
1986	7.1	6.7	7.1	5.5
1985	5.4	7.5	5.0	5.0
1984	6.1	7.5	5.9	6.2
1983	8.3	8.5	8.2	6.8
South				
1987	7.0	6.5	7.1	6.7
1986	7.5	6.4	7.7	6.3
1985	5.7	6.9	5.5	6.3
1984	5.9	7.7	5.6	7.4
1983	9.4	8.8	9.6	8.0
West				
1987	7.0	6.6	7.0	6.3
1986	7.5	6.6	7.7	6.0
1985	6.5	7.9	6.2	5.9
1984	4.9	6.8	4.6	5.5
1983	7.8	8.3	7.8	5.6

*Based on annual averages through 1986, and first 10 months of 1987 compared with the same period in 1986.
Source: U.S. Bureau of Labor Statistics.

Geographically, there are significant differences in price changes for medical care goods and services. In 1987 overall health care prices increased fastest in the West and South, closely followed by those in the Northeast. In the North Central area the relative change was substantially lower. Medical care commodities recorded a similar price rise across the four regions. On the other hand, professional services showed a wide variation among the regions, with a gap of one and one-half percentage points between the Northeast and the North Central states. The recent trend of the price changes in the four regions of the United States are presented in Table 3.

The sharp acceleration of medical care costs witnessed during the early 1980s has subsided, reflecting a moderation of inflation, and cost containment efforts by both government and the private sector. Nevertheless, the share of the nation's goods and services devoted to health care is still rising. This share is expected to continue to increase in the foreseeable future as there is little likelihood of further progress on the inflation front, and demographic changes put upward pressure on demand for health care. □

For a copy of the entire study,
Trends in Medical Care Costs, write to:
Statistical Bulletin, Dept. E
One Madison Avenue, New York, NY 10010.

Commentary
The Medical Care Cost Dilemma

The solutions to rising medical care costs have perplexed Americans for more than a decade. The various discourses to achieve lower costs continue to cause heated debate among the parties involved: consumers, providers, employers, employees, taxpayers, suppliers to industry, government administrators and policymakers. Through diverse cost containment and management efforts in these years, progress has been made, and undoubtedly current and future costs would be higher without them. Nevertheless, these efforts have *not* produced the expected panacea and have disappointed many. In fairness, however, to the concepts and achievements of cost containment, improvements have been offset by underlying economic and demographic forces that continue to push up costs at a rate significantly faster than overall economic growth.

Increasing *prices* are a reaction to rising demand for medical services. In addition to price considerations, increasing *costs* are expected to extend well into the future because of greater utilization of medical care and services stemming from the AIDS crisis, the gradual aging of the population, and what may be called the innovation factor. This means that as innovations are made in cures, treatments and techniques, they often become more expensive than those previously used, making the cost of progress sometimes steep.

Ideally, price and cost should not constrain medical care delivery but, realistically, we live in a world of limited resources. At some point, hard choices may have to be made between medical and other competing needs of society. The emergence of the debate on health care costs suggests that the choices are, perhaps, becoming more difficult. And, undoubtedly, the dialogue will increase in intensity.

If such debate is to be fruitful, it is important that the participants distinguish carefully between price and cost, cost containment and cost shifting, and quality and efficiency versus cost containment. Hopefully, as society seeks solutions to these complex and difficult issues, the disciplines of the marketplace, including user choice and at least some user responsibility for cost, will be preserved as much as feasible.

All too often price and cost containment receive too much negative publicity and their positive benefits are ignored. Public sensitivity to price and cost pressures is needed to improve efficiency in an industry where demands will continue to grow rapidly. If "necessity is the mother of invention," innovation and technological advancement can be expected to accelerate in the years ahead. Such necessities also have forced society to reemphasize the prevention side of the medical care equation, with "wellness" programs highlighting the important role of the individual in maintaining good health habits.

One hopes that frank and open discussions will foster new, multi-faceted and coherent approaches to resolving the economic problems of medical care, while still preserving quality medical treatment. □

Robert H. Vatter
Mr. Vatter is Vice-President and Economist, Business Economics Department, Metropolitan Life Insurance Company.

Multiple Births: An Upward Trend in the United States

Plural birth rates have been steadily rising since 1980. While still a relatively infrequent event, 6 percent more multiple births occurred in the United States in 1985 than in 1984 and 13 percent more than in 1980. Further, the ratio of these births per 1,000 total live births reached a 30-year high in 1985—21.0 for all U.S. women of childbearing age.[1]

A Global View

The number and rate of multiple births vary over time both between countries and within countries.[2-4] The reasons for these variations continue to be explored and are the subject of much study. High rates of twins are observed in Nigeria, intermediate rates in the United States and the lowest rate of such births is reported in Japan.[3] The rates for live triplet births follow similar geographical patterns.[3,4] Of special interest is the fact that the rate of live monozygotic (identical) twin births remains fairly constant throughout the world. The frequency of dizygotic (fraternal) twin births, on the other hand, varies a great deal both between countries and within countries and by the age of the mother.

High rates of twins are observed in Nigeria, intermediate rates in the United States and the lowest in Japan.

Within the United States black women continue to have higher rates of multiple births than white women. Across all countries, rates are known to increase with maternal age.[3-6] Other suggested contributing factors in plural births include increased parity, oral contraceptive history, maternal height, urbanization and socioeconomic status.[3,7-10] The role played by genetics in multiple births is unclear, although some twinning is thought to be a familial trait.[2]

Within the United States, black women continue to have higher rates of multiple births than white women.

Historically, twin births have averaged 1.1 percent of all maternities.[2,4] The introduction of fertility drugs in the early 1960s, however, has increased the chance of multiple births in this country, with the increase apparently affecting higher order multiple births more than twins.[7] In 1985, 2.5 percent of plural births were triplets and/or higher order deliveries, up from 2.1 percent in 1983.[1] Twin deliveries remain the predominant form of plural live births, annually averaging around 2 percent of all live births and 97 to 98 percent of all plural deliveries.

Twin deliveries remain the predominant form of plural live births, annually averaging around 2 percent of all live births and 97 to 98 percent of all plural deliveries.

Live Births by Plurality, 1960-1985, by Race

The trend in the rate of plural births per 1,000 total live births is presented in the accompanying figure. It should be noted that 1985 is the last year for which official natality statistics are available, and data for 1969 and 1970 were incomplete, thus precluding rate calculations for these two years. As can be seen, the rates have fluctuated over the 26 years for both races. However, the rate of black births has been consistently higher than that of white births.

In the early sixties, the rates of plural births decreased for both races, dropping

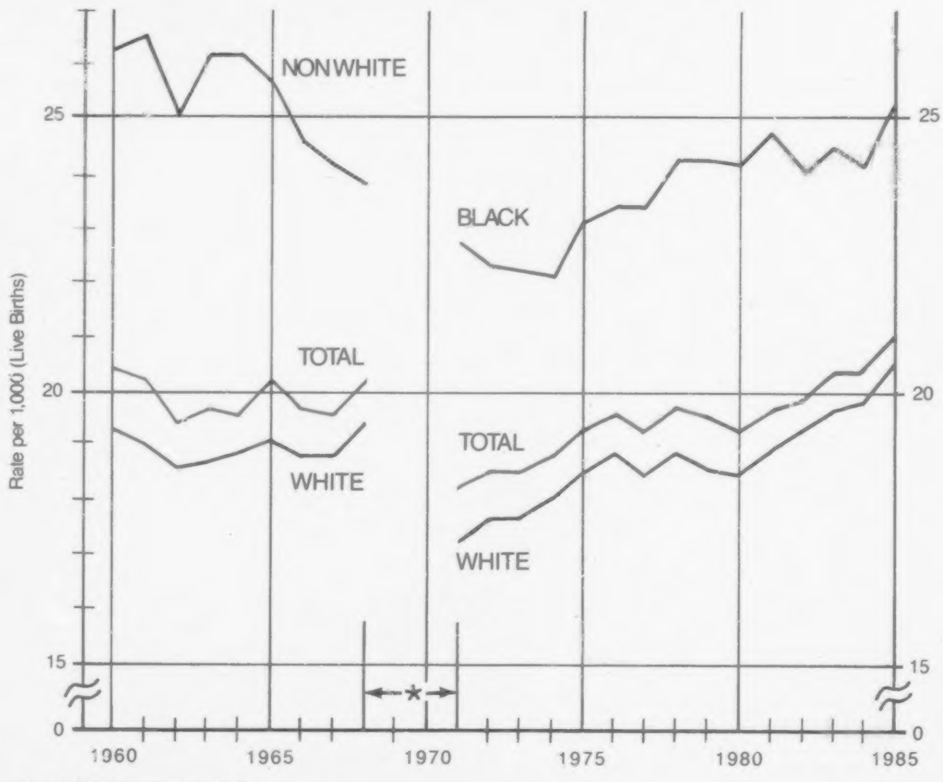
EEWƎE
EMWEWE

David Johnson

> The difference in the ratio of multiple births by race has decreased considerably over the 26 years of data.

faster for nonwhites than whites. Major fluctuations occurred among the nonwhite rates through 1968, while the rates among whites slowly rose from the 1962 low. The rates remained fairly stable during the 1970s, averaging around 23 per 1,000 live births for black women and 18 for whites. Since

Live Births From Plural Confinements per 1,000 Total Live Births, by Race, United States 1960–1985



*Incomplete data; rates not calculated.
Source of basic data: National Center for Health Statistics;
computations by Health and Safety Education personnel, Metropolitan Life Insurance Company.

Table 1 — Live Births by Race of Child and Age of Mother, United States, 1985

	Live Births			Rate of Multiple Births per 1,000 Live Births			Live Twin Births as Percent of Total Multiple Births		
Age of Mother	All Races	White	Black	All Races	White	Black	All Races	White	Black
Total	3,760,561	2,991,373	608,193	2.1	2.0	2.5	97.6	97.3	98.4
Under 15	10,220	4,101	5,860	1.0	1.1	0.9	96.9	93.3	100.0
15 – 19	467,455	318,725	134,270	1.3	1.2	1.6	99.0	98.9	99.0
20 – 24	1,141,32	894,195	207,330	1.9	1.8	2.4	98.1	97.9	98.6
25 – 29	1,201,350	997,233	152,306	2.2	2.2	2.9	97.0	96.9	97.4
30 – 34	696,354	580,398	78,129	2.6	2.6	3.4	97.3	96.9	99.2
35 – 39	214,336	173,681	26,216	2.7	2.7	3.2	97.4	97.2	97.9
40 – 44	28,334	22,264	3,888	2.1	2.1	2.2	97.3	97.8	98.9
45 – 49	1,162	776	194	1.9	1.0	3.1	100.0	100.0	100.0

Source of basic data: National Center for Health Statistics; computations by Health and Safety Education personnel, Metropolitan Life Insurance Company.

1980, however, the ratio for all such births has been increasing; the ratio for all women rose from 19.3 in 1980 to 21.0 in 1985. For black mothers, the ratio rose from 24.1 to 25.3, and for whites the increase was from 18.5 per 1,000 live births to 20.4.

Between 1980 and 1985 the ratio of plural births to live births increased 10 percent for white women, with steady increases each year. Among blacks, the ratios fluctuated between years, but showed an overall increase of 5 percent between 1980 and 1985.The increase in the black rate was due almost totally to the rise between the 1984 and 1985 ratios. The 1985 plural birth rate for blacks (25.3 per 1,000 live births) was 24 percent higher than that for whites—20.4. Between 1984 and 1985, the rates rose 3 percent for whites and 5 percent for blacks.

The difference in the ratio of multiple births by race has decreased considerably over the 26 years of data—the rate for plural nonwhite births in 1960 was 36 percent higher than that for white plural births (26.3 vs. 19.3 per 1,000 live births, respectively). As mentioned above, in 1985 the difference between the races had decreased to 24 percent.

Multiple Births by Age and Race

More than 3.7 million live births were registered in the United States in 1985 (Table 1). Of these deliveries, twins, triplets, quadruplets and higher order plural births accounted for 2.1 percent among all U.S. women of childbearing age. By race, 2.5 percent of black babies were from multiple births, as were 2.0 percent of white babies and 1.6 percent of babies of other races.

Table 2—Multiple Births* by Age of Mother
United States, 1980 and 1985

Age of Mother	Live Births From Plural Confinements†					
	1980			1985		
	All Plural Deliveries	Twin Births	Triplet and Other Deliveries	All Plural Deliveries	Twin Births	Triplet and Other Deliveries
All ages	**19.3**	**18.9**	**0.4**	**21.0**	**20.5**	**0.5**
Under 15	7.8	7.8	—	9.6	9.3	0.3
15 – 19	13.1	12.9	0.2	13.2	13.1	0.1
20 – 24	17.7	17.4	0.3	18.7	18.3	0.4
25 – 29	20.9	20.5	0.4	22.3	21.6	0.7
30 – 34	24.1	23.5	0.6	26.2	25.5	0.7
35 – 39	25.8	25.3	0.5	27.0	26.3	0.7
40 – 44	23.2	23.0	0.3	21.0	20.5	0.6
45 – 49	7.5	6.7	0.8	18.9	18.9	—

*Number of live births in multiple deliveries per 1,000 total live births.
† Confinements in which at least one infant was born alive.
Source of basic data: National Center for Health Statistics; computations by Health and Safety Education personnel, Metropolitan Life Insurance Company.

The likelihood of a plural birth varies with the age of the mother, for both races. Chances are smallest among teenage mothers.

As seen in Tables 1 and 2, the likelihood of a plural birth varies with the age of the mother, for both races. The chances are smallest among mothers in their teens. The rates rise progressively with age to a maximum age of 35-39 for white women and decrease thereafter.

The ratio of multiple births to white mothers aged 35-39 was two-and-one-quarter times the rates for white teenagers. For blacks the rates climb to ages 30-34, drop in each of the next two age groups and increase again among mothers 45 to 49 years old. The plural birth rates for black mothers were higher than those for whites in each age group except age 14 and younger.

While the numbers are quite small, triplets and other higher order multiple births among whites seem to be concentrated either among the very young (under 15) or between ages 25 and 34. For black women multiple births are almost entirely comprised of twin deliveries. By age, higher order multiple births are slightly more frequent among black mothers aged 25 to 29 and 35 to 39.

Multiple Births, 1980 and 1985

Between 1980 and 1985 the rate of plural deliveries increased among mothers of all races in all age groups except the 40-44-year-olds (Table 2). In 1985 the rate rose from 9.6 for mothers under 15, to 27.0 for 35-39-year-olds and dropped to 18.9 for 45-49-year-old mothers. This latter group of mothers is almost totally comprised of black women whose rate of twin births is increasing through age 49.

For mothers 40 to 44, the 1985 drop in their multiple birth ratio was due primarily to a decrease in the birth of twins. The twin rate was almost three times higher among 45-49-year-old mothers in 1985 than in 1980 and the increase was most evident among black mothers. Triplet and higher order multiple births were twice as high among women aged 40-44 in 1985 than in 1980.

There are a number of factors that may explain the recent increase in the multiple birth rates in the United States. The most often quoted factor is the increasing tendency for women to delay childbirth until their 30s and later. Other explanations include the growing use of fertility drugs to help formerly childless women to conceive and the increasing number of women who have used oral contraceptives.

Since there is no reason to believe that any of these trends will subside, it is anticipated that the multiple birth rates will continue to increase. As experience with dosage and type of fertility drugs grows, methods are devised to reduce complications associated with use of such drugs and monitoring is increased during administration of the drug, researchers anticipate that higher order plural births (e.g., sextuplets, septuplets, etc.) will be an event of the past.[7] □

References

[1] National Center for Health Statistics. "Advance report of final natality statistics 1985." *Monthly Vital Statistics Report.* 33(4) Supl. DHHS Pub. No. (PHS) 87-1120. Hyattsville, Md., Public Health Services, 1987.

[2] Sheets, J.W. "Excessive twinning in a rural American genealogy." *Annals Human Biol.* 11(3): 257-259, 1984.

[3] MacGillivray, I. "Epidemiology of twin pregnancy." *Seminars in Perinatol.* 10(1): 4-8, 1986.

[4] Allen, G. "The twinning and fertility paradox." Pages 1-13 in *Twin Research 3: Twin Biology and Multiple Pregnancy.* New York, N.Y., Alan R. Liss, Inc., 1981.

[5] Wyshak, G. "Twinning rates among women at the end of their reproductive span and their relation to age at menopause." *Am. J. Epidemiol.* 102(2): 170-178, 1975.

[6] Myrianthopoulos, N.C. "An epidemiologic survey of twins in a large, prospectively studied population." *Am. J. Human Genetics.* 22(6): 611-629, 1970.

[7] Wyshak, G. "Statistical findings on the effects of fertility drugs on plural births." Pages 17-33 in *Twin Research: Biology and Epidemiology.* New York, N.Y.: Alan R. Liss, Inc., 1978.

[8] Parisi, P., Caperna, G. "Twinning rates, fertility, and industrialization: A secular study." Pages 375-394 in *Human Genetics, Part A: The Unfolding Genome.* New York, N.Y.: Alan R. Liss, Inc., 1982.

[9] Bracken, M.B. "Oral contraception and twinning: An epidemiologic study." *Am. J. Obstet. Gynecol.* 133:432-434, 1979.

[10] Rothman, K.J. "Fetal loss, twinning and birth weight after oral contraceptive use." *New Eng. J. Med.* 297(9): 468-471, 1977.

Capsule Briefs

are timely literature selections with broad reader interest

Doctors' Attitudes About AIDS

In this 1985 survey of 314 Los Angeles County physicians (including heterosexuals and homosexuals) concerning their attitudes about the Acquired Immunodeficiency Syndrome (AIDS), it was found that most felt inadequately trained and educated medically to treat these patients. Many of the physicians were worried about the risk of contagion, and this concern was a deterrent to treating AIDS cases. The authors note that current evidence indicates this concern is unfounded. (Richardson, J.L., *et al*, **Medical Care**, 25:675-685, 1987.) □

Which Carries the Greater Risk: Pregnancy or Induced Abortion?

The authors surveyed reproductive mortality in the United States during 1975-82 to observe the rates attributable to pregnancy and childbirth (P/Ch), contraception (Co), and induced abortion (I A). They found that total deaths declined for these 3 from 1083 to 751 in that interval. The decline in death rates was greatest in I A (89 percent), and was identical in P/Ch and Co (35 percent). The adjusted mortality rates (per 100,000 women at risk) for these 3 in 1982 were: P/Ch (10.0); Co (1.3); and I A (0.4). Based on these data, *the answer is*: pregnancy carries 25 times the risk of induced abortion. (Rosenberg, M.J. and Rosenthal, S.M., **American Journal of Public Health**, 77:833-836, 1987.) □

Detecting Large Bowel Disease: Colonoscopy Wins the Day

In this small-sample British study of 66 patients with suspected large bowel disease, each was given flexible sigmoidoscopy, then double-contrast barium enema (DCBE) and finally colonoscopy (C). The results of the clinical examinations were evaluated to determine which of the latter two methods was the more clinically reliable and satisfactory for patients. It actually was "no contest" because C detected 91 percent of disease present, whereas DCBE only found 64 percent of pathology. Patients tolerated C much better as well. (Durdey, P., *et al*, **The Lancet**, 2:549-551, 1987.) □

Chiropractors Have Their Day in Court

A federal judge ruled against the American Medical Association, the American College of Surgeons and the American College of Radiology in an 11-year-old suit brought by four chiropractors. The judge, Susan Getzendanner, stated that the defendants had violated antitrust laws when a boycott was instituted against chiropractors in the mid-1960s. This was the third trial in the case after a 1981 verdict in favor of the AMA had been appealed and won by the chiropractors. (**American Medical News**, pp 1 & 48, September 11, 1987.) □

The Joint Commission on Accreditation of Hospitals Makes Changes

Established in 1951 as *the* organization to monitor quality of hospitals in the United States, the **JCAH** has increasingly recognized that hospitals provide many new services not like those **JCAH** was established to monitor. Accordingly, they have refocused their objectives and changed names to the "Joint Commission on Accreditation of Healthcare Organizations." (**American Medical News**, pp 2 & 31, September 18, 1987.) Another change was redefining evaluation methodology from hospital organizational *structure* to clinical and organizational *performance*, announced earlier. (Lehmann, R.D., **Quality Review Bulletin**, 13:148-150, 1987.) □

Does Breast-feeding Have a Contraceptive Effect in Third World?

Breast-feeding seems to have a substantial contraceptive effect in Third World countries according to these authors who analyzed data from 20 inquiries in the World Fertility Survey (1974 to 1982). In postpartum women who did not breast-feed and did not use contraception, the observed median birth interval was 17 months (including the 9 months of pregnancy). Among women who breast-fed (and who also did not use birth control) the interval was 29 months. (In countries with high birth rates, that 12-month difference would have substantial impact on population growth rates—ed.) (Goldman, N., *et al*, **Population Studies**, 41:127-146, 1987.) □

Alcohol Abuse Differences in the Urban-Rural South

The authors note, "the South is generally depicted as more pastoral and, therefore, more likely to be free of alcohol disorders." (**SB** has reported in January-March 1987 that, based on alcohol taxes paid, southern states seem to have lower consumption—ed.) In this well-analyzed study based on a survey of urban-rural alcohol abuse/dependence in North Carolina, it was found that rural areas had higher abuse/dependence rates, largely attributable to the rural black population's contribution to the data (their relative risk = 2.88). The authors note, however, that the problem of alcohol-related disorders is too complex to be explained by geographic factors alone. (Blazer, D., *et al*, **Archives of General Psychiatry**, 44:736-740, 1987.) □

Women's Longevity Advantage Declines

Women still live longer than men, but recently their advantage has slipped some. Since the beginning of this century, at each age from birth to the end of life, females have experienced more favorable longevity than their male counterparts. Moreover, this advantageous gap steadily widened between 1919-21 and 1979-81. Thereafter, however, the longevity disparities between the sexes have gradually diminished.

According to the 1986 Provisional Life Tables, newborn girls can, on the average, expect to live 7.0 years more than infant boys.

According to the 1986 Provisional Life Tables, newborn girls can, on the average, expect to live 7.0 years more than infant boys. This is exactly the same margin as in 1985 and 1984, but is less than the differential of 7.1 years recorded in 1983, the gap of 7.3 years in 1982 or the spread of 7.5 years experienced in 1981 and 1980. Historically, the largest sex disparity in average future lifetime at birth—7.8 years—occurred in 1975 and was repeated in 1979. Back in 1920 the female longevity advantage at birth was just 1.0 years.*

Historically, the largest sex disparity in average future lifetime at birth—7.8 years—occurred in 1975 and was repeated in 1979.

Women's longevity advantage diminishes with advance in age, declining to 2.7 years at age 75. This is the only age (among those examined) in which a reduction in the life expectancy gap between men and women did not occur since 1979-81. This may be seen in Table 1, which presents the trend in life expectancy at selected ages for men and women since 1900-02. The bottom tier shows the differences in average remaining lifetime.

For all ages combined, men in the United States have, in nearly all cases, experienced greater mortality on an age-adjusted basis than women. The extra mortality among men rose from a 7 percent excess in 1920 to as much as 80 percent in 1980; thereafter it gradually declined. Currently, the sex differential remains high, ranging from around 26 percent greater mortality at ages under 5 and at 85 and over to nearly 200 percent larger at ages 15-24. At ages 25-34, the disparity is 170 percent and declines to slightly more than 100 percent at ages 35-44. At ages 45-74, mortality among men is about four-fifths larger than among women but declines to about two-thirds greater at ages 75-84.

When examining the trend in mortality differentials by age, shown in Table 2, it is evident that the largest mortality disparity between the sexes was recorded in 1980. Since that time, the sex disparities in mortality among most age groupings have diminished or plateaued. The exceptions occur among persons in the most important economic group, namely those aged 25-54. In those age brackets the female mortality advantage continues to grow, especially so since 1984.

Sex Differentials in Leading Causes of Death

For the total U.S. population, analysis of the sex differentials in mortality from the leading causes of death reveals that in 1985 mortality among men was considerably higher than among women for nearly all leading causes of death. The death rate from diseases of the heart—the leading cause of death for both sexes—was nearly twice as large among men

---

*See *Statistical Bulletin*, Jul-Sep 1987, p. 8, for a graph of the trend in expectation of life by sex among newborns.

Table 1—Expectation of Life, by Age, United States, 1900 to 1986

	Expectation of Life (In Years)								
Period	**At Birth**	**5**	**15**	**25**	**35**	**45**	**55**	**65**	**75**
Male									
1986*	71.3	67.3	57.5	48.3	39.1	30.1	21.8	14.8	9.1
1985	71.2	67.2	57.4	48.1	38.9	29.9	21.6	14.6	9.0
1979 – 81	70.1	66.3	56.5	47.4	38.2	29.2	21.1	14.2	8.9
1969 – 71	67.0	63.8	54.1	45.1	36.0	27.2	19.4	13.0	8.1
1959 – 61	66.8	64.1	54.4	45.2	35.9	27.1	19.3	13.0	8.0
1949 – 51	65.5	63.1	53.6	44.4	35.2	26.6	19.0	12.7	7.8
1939 – 41	61.6	60.8	51.4	42.5	33.8	25.5	18.2	12.1	7.2
1929 – 31†	57.8	58.2	49.2	40.8	32.7	24.8	17.8	11.7	7.0
1919 – 21†	55.4	57.4	48.8	41.0	33.3	25.7	18.5	12.2	7.3
1909 – 11‡	49.9	55.1	46.7	38.6	30.9	23.8	17.0	11.2	6.8
1900 – 02‡	47.9	54.2	46.1	38.4	31.2	24.1	17.4	11.5	6.8
Female									
1986*	78.3	74.2	64.3	54.6	45.0	35.5	26.6	18.6	11.8
1985	78.2	74.1	64.2	54.5	44.8	35.4	26.5	18.6	11.7
1979 – 81	77.6	73.7	63.8	54.2	44.5	35.2	26.4	18.4	11.6
1969 – 71	74.6	71.2	61.4	51.8	42.3	33.1	24.6	16.8	10.3
1959 – 61	73.2	70.2	60.5	50.8	41.3	32.1	23.5	15.8	9.3
1949 – 51	71.0	68.2	58.5	49.0	39.6	30.6	22.3	15.0	8.9
1939 – 41	65.9	64.4	55.0	45.9	37.0	28.5	20.5	13.6	8.0
1929 – 31†	61.2	60.7	51.6	43.0	34.9	26.8	19.4	12.8	7.6
1919 – 21†	57.3	58.2	49.4	41.6	34.2	26.6	19.3	12.7	7.7
1909 – 11‡	53.2	57.4	48.9	40.7	33.0	25.4	18.1	12.0	7.2
1900 – 02‡	50.7	55.8	47.6	39.9	32.7	25.4	18.4	12.2	7.3
Difference Female — Male									
1986	7.0	6.9	6.8	6.3	5.9	5.4	4.8	3.8	2.7
1985	7.0	6.9	6.8	6.4	5.9	5.5	4.9	4.0	2.7
1979 – 81	7.5	7.4	7.3	6.8	6.3	6.0	5.3	4.2	2.7
1969 – 71	7.6	7.4	7.3	6.7	6.3	5.9	5.2	3.8	2.2
1959 – 61	6.4	6.1	6.1	5.6	5.4	5.0	4.2	2.8	1.3
1949 – 51	5.5	5.1	4.9	4.6	4.4	4.0	3.3	2.3	1.1
1939 – 41	4.3	3.6	3.6	3.4	3.2	3.0	2.3	1.5	.8
1929 – 31	3.4	2.5	2.4	2.2	2.2	2.0	1.6	1.1	.6
1919 – 21	1.9	.8	.6	.6	.9	.9	.8	.5	.4
1909 – 11	3.3	2.3	2.2	2.1	2.1	1.6	1.1	.8	.4
1900 – 02	2.8	1.6	1.5	1.5	1.5	1.3	1.0	.7	.5

* Provisional.

† Weighted average of white and nonwhite life expectancy.

‡ Original Death Registration States.

Source of basic data: Bureau of the Census and the National Center for Health Statistics.

as among women for all ages combined. Mortality from this cause was higher among men than among women in every age group, with the exception of ages 5-14. The largest disparity between the sexes occurred at ages 35-54, where the differential amounted to about 220 percent. In the succeeding age groups, the disparity gradually diminished with advance in age.

> The death rate from diseases of the heart—the leading cause of death for both sexes—was nearly twice as large among men as among women for all ages combined.

Table 2—Sex Ratio of Mortality, by Age United States, 1900 to 1986

		Ratio of Male to Female Mortality (%)										
Year	All Ages†	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and over
1986*	**174**	127	124	155	287	270	204	190	180	174	162	128
1985	**176**	127	126	150	297	271	207	181	182	181	165	127
1984	**175**	124	123	152	277	254	191	181	186	182	163	129
1983	**176**	124	131	155	277	253	190	180	187	186	164	128
1982	**178**	125	123	153	289	257	189	185	190	188	164	128
1981	**179**	124	127	157	289	257	191	185	192	190	164	128
1980	**180**	125	133	152	300	258	188	186	194	191	162	127
1970	**175**	129	124	159	277	212	174	185	208	189	150	115
1960	**161**	132	121	149	248	176	163	188	193	171	133	111
1950	**145**	131	120	145	188	152	148	166	171	148	124	113
1940	**129**	130	117	132	126	123	130	145	145	129	117	108
1930	**119**	127	115	124	109	110	121	128	125	119	112	107
1920	**107**	128	109	113	96	90	103	108	110	108	105	103
1910‡	**116**	124	109	106	114	113	126	126	121	112	109	104
1900‡	**110**	123	107	99	103	101	109	111	112	111	108	105

* Provisional.

† Adjusted on basis of age distribution of the United States total population, 1940.

‡ Original Death Registration States.

Source of basic data: Reports of Division of Vital Statistics, National Center for Health Statistics.

Mortality from the second leading cause of death—malignant neoplasms (or cancer)—was about 50 percent higher for men than for women. However, at ages 25-44 death rates among women were greater than those among men, with the disparities favoring men by 14 percent at ages 35-44. On the other hand, at ages 75 and over, mortality among men was nearly double that among women.

Next in rank order of leading causes of death was cerebrovascular diseases. For all ages combined, the death rate from this cause was 17 percent higher among men than among women. With the exception of the experience during the first year of life, the margin in favor of women was largest at ages 55-64 and 65-74 years. Death rates were about a third higher among men in these two age groups. At the extreme ages mortality rates favored men.

Men experienced death rates from the chronic obstructive pulmonary diseases and allied conditions that were two-and-a-quarter times that of women. Mortality from these causes of death—mainly, bronchitis, emphysema and asthma—was about the same for both men and women at ages 15-24. Thereafter, the advantage favored women, and the differential generally became progressively larger with advance in age. The mortality ratio reached 363 percent at ages 85 and over.

With regard to mortality from pneumonia and influenza, men once again experienced less favorable mortality than women. Overall, the age-adjusted death rate among men was four-fifths higher than among women. However, at ages 1-4 the death rate among boys was the same as that of girls. Among the remaining age groups, the largest mortality differential occurred at ages 55-74, nearly 110 percent.

The smallest disparity in the sex ratios of mortality occurred from diabetes mellitus. For all ages combined, the death rate among men was just 5 percent higher than among women. At ages 35-44 mortality among men was 55 percent greater than among women, but at ages 55 and over there were no notable differences in the death rates by

Table 3—Sex Ratio of Mortality from Leading Causes of Death United States, 1985

Cause of Death	All* Ages	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and Over
	Ratio of Male to Female Mortality(%)											
All causes	**175**	128	131	152	283	258	201	180	184	181	163	128
Diseases of heart	**195**	126	100	90	167	230	319	321	260	202	156	117
Malignant neoplasms	**148**	91	130	126	151	99	86	106	140	168	194	191
Cerebrovascular diseases	**117**	173	†	†	100	105	107	120	134	131	115	90
Accidents and adverse effects	**278**	113	153	202	332	408	337	294	262	185	180	169
Chronic obstructive pulmonary diseases and allied conditions	**223**	238	†	†	100	120	107	123	166	225	307	363
Pneumonia and influenza	**180**	134	100	†	160	173	187	190	210	211	184	149
Diabetes mellitus	**105**	†	†	†	†	136	155	124	102	101	101	94
Suicide	**384**	†	†	†	486	415	314	283	348	483	781	1,204
Chronic liver disease and cirrhosis	**223**	†	†	†	†	195	252	232	234	203	182	176
Atherosclerosis	**131**	†	†	†	†	†	†	240	228	178	124	97
Nephritis, nephrotic syndrome, and nephrosis	**153**	124	†	†	†	†	200	125	131	148	162	181
Homicide and legal intervention	**328**	108	104	140	371	361	365	356	337	246	171	129

* Adjusted on basis of age distribution of the United States total population, 1940.
† Mortality rates less than 0.5 per 100,000; ratio not computed.
Source of basic data: unpublished data from Division of Vital Statistics, National Center for Health Statistics.

> The smallest disparity in the sex ratios of mortality occurred from diabetes mellitus.

sex. Mortality from chronic liver disease and cirrhosis was 123 percent higher among men than among women. The disparity was roughly this magnitude in virtually every age group through ages 74; thereafter, the sex differentials diminished.

Violent Ends

The largest sex disparities in the mortality ratios were reported from the violent causes of death—accidents, suicide and homicide. As a rule of thumb, the death rates among men were about triple those for women. Specifically, mortality from suicide among men of all ages was 284 percent higher than that for women. At ages 15-24, 25-34 and 65-74, suicide death rates among men were more than four times larger than those for women.

Notwithstanding this large disparity, the ratios were markedly greater at ages 75-84 and 85 and over. In cases of mortality from homicide and legal intervention, the ratio of death rates was around 360 percent at ages 15-54. The mortality rate from accidents and adverse effects was about 180 percent higher among men than among women for all ages combined, peaked at about 300 percent higher at ages 25-34 and had a 235 percent spread at ages 15-24 and 35-44. The details of the disparities in the sex ratios of mortality are shown in Table 3.

Racial Factors

The previous analysis showed significant mortality differentials when death rates are examined by age and sex. When mortality rates are further scrutinized by race, additional disparities become evident. Table 4 presents, for six main age groupings, an analysis of the leading causes of death

Table 4 — Mortality from Leading Causes of Death* United States, 1985

Cause of Death	WHITE					ALL OTHER				
	Death Rate per 100,000		Percent Male of Female Death Rate	Percent of All Causes		Death Rate per 100,000		Percent Male of Female Death Rate	Percent of All Causes	
	Male	Female		Male	Female	Male	Female		Male	Female
AGES 1 – 4										
All Causes	52.4	39.7	**132**	100.0	100.0	82.8	64.6	**128**	100.0	100.0
Accidents and adverse effects	22.3	14.4	**155**	42.6	36.3	31.9	21.5	**148**	38.5	33.3
Congenital anomalies	6.0	5.4	**111**	11.5	13.6	6.7	6.3	**106**	8.1	9.8
Malignant neoplasms	4.4	3.5	**126**	8.4	8.8	3.7	2.6	**142**	4.5	4.0
Homicide and legal intervention	1.9	1.6	**119**	3.6	4.0	5.4	5.3	**102**	6.5	8.2
Diseases of heart	1.7	1.6	**106**	3.2	4.0	3.9	4.5	**87**	4.7	7.0
AGES 5 – 14										
All Causes	29.9	19.4	**154**	100.0	100.0	38.7	26.7	**145**	100.0	100.0
Accidents and adverse effects	15.7	7.7	**204**	52.5	39.7	20.4	10.4	**196**	52.7	39.0
Malignant neoplasms	4.0	3.1	**129**	13.4	16.0	3.6	2.8	**129**	9.3	10.5
Congenital anomalies	1.3	1.3	**100**	4.3	6.7	1.9	1.4	**136**	4.9	5.2
Homicide and legal intervention	1.1	.8	**138**	3.7	4.1	2.9	2.0	**145**	7.5	7.5
Diseases of heart	.8	.9	**89**	2.7	4.6	1.5	1.5	**100**	3.9	5.6
AGES 15 – 24										
All Causes	136.3	48.4	**282**	100.0	100.0	164.2	57.1	**288**	100.0	100.0
Accidents and adverse effects	77.9	24.0	**325**	57.2	49.6	55.4	14.3	**387**	33.7	25.0
Suicide	22.7	4.7	**483**	16.7	9.7	15.1	2.8	**539**	9.2	4.9
Homicide and legal intervention	11.2	3.6	**311**	8.2	7.4	56.4	12.4	**455**	34.3	21.7
Malignant neoplasms	6.5	4.3	**151**	4.8	8.9	6.1	4.3	**142**	3.7	7.5
Diseases of heart	3.0	1.7	**176**	2.2	3.5	6.3	4.0	**158**	3.8	7.0
AGES 25 – 44										
All Causes	193.6	86.3	**224**	100.0	100.0	389.2	168.2	**231**	100.0	100.0
Accidents and adverse effects	53.6	14.2	**377**	27.7	16.5	69.8	17.8	**392**	17.9	10.6
Diseases of heart	27.9	8.4	**332**	14.4	9.7	54.0	23.3	**232**	13.9	13.9
Malignant neoplasms	24.5	27.8	**88**	12.7	32.2	32.1	33.7	**95**	8.2	20.0
Suicide	24.6	6.9	**357**	12.7	8.0	17.1	3.6	**475**	4.4	2.1
Homicide and legal intervention	12.8	4.0	**320**	6.6	4.6	70.7	14.8	**478**	18.2	8.8
AGES 45 – 64										
All Causes	1,105.5	607.8	**182**	100.0	100.0	1,653.3	917.7	**180**	100.0	100.0
Diseases of heart	427.5	145.8	**293**	38.7	24.0	532.9	276.7	**193**	32.2	30.2
Malignant neoplasms	332.7	269.8	**123**	30.1	44.4	470.9	291.0	**162**	28.5	31.7
Accidents and adverse effects	47.0	17.8	**264**	4.3	2.9	80.3	23.1	**348**	4.9	2.5
Chronic liver disease and cirrhosis	37.3	16.0	**233**	3.4	2.6	57.3	24.3	**236**	3.5	2.6
Cerebrovascular diseases	35.9	27.8	**129**	3.2	4.6	92.5	68.8	**134**	5.6	7.5
AGES 65 and Over										
All Causes	6,094.2	4,513.2	**135**	100.0	100.0	6,232.1	4,440.7	**140**	100.0	100.0
Diseases of heart	2,543.8	1,950.7	**130**	41.7	43.2	2,297.5	1,821.1	**126**	36.9	41.0
Malignant neoplasms	1,369.6	817.5	**168**	22.5	18.1	1,575.6	779.9	**202**	25.3	17.6
Cerebrovascular diseases	422.1	483.0	**87**	6.9	10.7	512.3	514.7	**100**	8.2	11.6
Chronic obstructive pulmonary disease and allied conditions	347.1	137.9	**252**	5.7	3.1	208.8	60.3	**346**	3.4	1.4
Pneumonia and influenza	240.9	189.5	**127**	4.0	4.2	224.8	129.8	**173**	3.6	2.9

*Listed according to rank among all males in 1985.

Source of basic data: Unpublished data from National Center for Health Statistics and Bureau of Census Current Population Reports.

for each age category by race and sex during 1985. At the preschool ages the disparity in mortality rates was moderate—the death rate from all causes combined for boys was 32 percent greater than for girls among whites and 28 percent larger for boys of all other races.

In the two succeeding age brackets, the sex differentials in mortality rose rapidly. The largest difference occurred in the 15-24 age category—182 percent among whites and 188 percent among nonwhites. These substantial differences mainly reflect the higher accident death rates among men—particularly from motor vehicle accidents. Although the male/female ratios gradually decrease with advance in age, the differential only falls to 35-40 percent.

Accidental deaths are by far the leading cause of mortality among men under age 25. This cause accounts for around 40 percent of all deaths at ages 1-4 and slightly more than half of the deaths at ages 5-14. At ages 15-24, 57 percent of white male mortality and 34 percent of nonwhite male deaths are due to accidents. Among nonwhite men at these ages, mortality from homicide and legal intervention also comprises 34 percent of all deaths—by comparison this cause is responsible for 8 percent of the deaths among white males. On the other hand, mortality from suicide accounts for 17 percent of all deaths among white males aged 15-24 but just 9 percent of the deaths among nonwhite males in this age bracket.

Among persons 25-44 years of age, for both races, malignant neoplasms were the only cause of death in which female mortality rates exceeded those of males. For the other leading causes in this important age grouping, the sex differentials in favor of women were substantial. An examination of the percentage distribution by cause revealed that in this age group 28 percent of all white male deaths were attributed to accidents. For males of all other races, accidental fatalities accounted for 18 percent of all deaths—the toll from homicide and legal intervention was also responsible for 18 percent of all the deaths. Among women aged 25-44, malignant neoplasms comprised nearly one-third of all white deaths and one-fifth of those among nonwhites—mortality from accidents was roughly one-half as large for both races.

At ages 45-64, the death rates from diseases of the heart and malignant neoplasms far exceeded those from any other cause. These two major causes of death accounted for almost 70 percent of all fatalities among whites and slightly over 60 percent of those among nonwhites. The proportion of all deaths due to these causes generally diminished slightly for persons in the next older age group. At ages 65 and over, the largest disparity in the sex ratio occurred from chronic obstructive pulmonary diseases. For this cause, mortality rates among whites were 152 percent higher for males than for females. Among nonwhites the excess mortality amounted to 246 percent.

The existence of large differences in mortality rates between men and women was clearly documented in the previous discussion. However, the underlying reasons for the disparities are not as readily identified. It is known that both cigarette smoking and alcohol consumption play a major role in these differences and that genetic and environmental factors also contribute. In addition, lower occupational mortality among men in recent years has narrowed the sex differential to some degree. On the other hand, mortality attributed to the many new high-risk avocations (for example, hang gliding, sky diving and scuba diving) have tended to negate the men's gains. Among women longevity has been enhanced by lower maternal mortality but adversely affected by increased smoking. The net effect of all the recent changes in mortality rates has been to temper the long-term trend in the widening longevity advantage of newborn females. However, the detrimental effect of AIDS, especially on young men, makes it likely that a resumption in the prior pattern will occur in the foreseeable future. □

Variations in Mortality From Gastric Cancer

Current U.S. gastric cancer mortality rates are among the lowest in the world.[1] In 1987 an estimated 24,600 new cases of this disease were diagnosed in the United States and some 14,200 persons died from it.[2]

Current U.S. stomach cancer mortality rates are among the lowest in the world.

Gastric cancer mortality has been steadily decreasing for more than 50 years in the United States as well as many other Western countries. In 1930 this malignancy was the leading cause of cancer death among U.S. men and the third among women; by the mid-1980s it dropped to being the sixth leading cause of death for both sexes.[2,3] In spite of the marked, and largely unexplained, decrease in gastric cancer mortality rates over the last 55 years, it still remains a major problem in the United States and has the third poorest five-year survival rate after lung and pancreas cancer.[4,5] The poor prognosis is due in part to the fact that stomach cancer frequently is diagnosed late in its development, after metastases have occurred.

Large international and socioeconomic differences exist in gastric cancer death rates.

Large international and socioeconomic differences exist in gastric cancer death rates. For example, the mortality rates in Japan, Chile and Costa Rica continue to be the highest in the world, averaging around seven times the rate found in the United States.[3,6,7] In the United States, stomach cancer is more common among Hispanic men and women than blacks, and both these groups have higher rates than their white counterparts.[1,3] Further, Eastern Europeans have rates higher than Western Europeans and stomach cancer incidence and mortality are two times more frequent among lower than higher socioeconomic groups in many countries.[2,3,6,8] Such epidemiologic findings, as well as clinical studies have led to the conclusion that environmental factors play an important and perhaps dominant role in the etiology of this disease. The international variations in incidence and mortality and the results of migrant, case-control and laboratory studies all seem to implicate diet as the major environmental factor related to the development of this disease.

Among the dietary factors hypothesized as being related to gastric cancer development are smoked and/or salted foods, pickled vegetables, aflatoxins, low vitamin C intake and lack of refrigeration.[3,6,9] Identification of the specific dietary components and other environmental risk factors associated with gastric cancer, as well as the factors responsible for the declining rates, remains the subject of intensive investigation. These areas are some of the major goals of gastric cancer research and give rise to the hope of developing primary prevention strategies to help further decrease the incidence of this highly lethal disease in this country and perhaps accelerate its decrease in others.

Regional Distribution of Gastric Cancer Mortality

Gastric cancer death rates differ both between the sexes and by geographic area. The following regional analysis of stomach cancer mortality is based on the 1980

Mortality From Gastric Cancer
Among Men and Women Aged 45–84, United States, 1979–81

MEN Death Rate per 100,000						WOMEN Death Rate per 100,000				
Ages 45-84*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 75-84	Area	Ages 45-84*	Ages 45-54	Ages 55-64	Ages 65-74	Ages 75-84
21.1	6.7	18.4	41.1	76.0	UNITED STATES	**9.4**	3.0	7.7	18.1	37.0
23.5	7.1	20.1	46.1	88.0	New England	**10.9**	3.5	7.9	21.1	47.4
22.2	†	18.5	39.0	93.7	Maine	**10.5**	†	†	†	45.0
21.6	†	20.0	41.3	100.7	New Hampshire	**6.7**	†	†	†	42.8
†	†	†	†	†	Vermont	†	†	†	†	†
23.8	7.0	22.1	45.0	86.5	Massachusetts	**11.5**	4.2	7.7	22.4	47.8
25.0	†	17.1	55.3	83.5	Rhode Island	**12.0**	†	†	25.6	46.5
24.2	7.7	18.5	50.3	89.4	Connecticut	**11.4**	†	8.9	21.9	51.6
25.3	8.0	21.8	49.2	93.0	Middle Atlantic	**11.4**	3.3	8.7	23.5	45.0
26.1	7.5	22.4	51.3	100.1	New York	**12.1**	3.5	9.3	25.0	48.0
25.6	9.0	21.6	48.2	94.4	New Jersey	**11.8**	3.7	7.9	24.9	48.0
23.9	7.9	21.0	47.0	81.8	Pennsylvania	**10.2**	2.8		20.7	39.0
21.4	6.1	18.9	41.9	80.2	East North Central	**8.9**	2.8	7.6	16.5	34.6
20.8	5.2	19.6	40.6	76.8	Ohio	**8.8**	2.3	7.8	16.3	37.0
16.3	6.0	15.5	30.5	50.6	Indiana	**7.0**	2.8	5.0	13.2	27.7
23.4	7.5	20.7	45.2	82.7	Illinois	**9.9**	3.5	9.0	17.8	35.5
22.4	5.5	19.1	44.6	90.0	Michigan	**8.9**	2.8	7.6	16.7	34.8
22.4	6.6	16.6	44.4	94.9	Wisconsin	**8.4**	†	6.8	16.9	34.5
17.2	4.7	14.7	33.7	67.5	West North Central	**7.5**	1.9	6.0	14.7	31.8
20.7	6.2	14.3	44.4	83.4	Minnesota	**8.5**	†	7.8	16.0	32.4
15.4	†	12.9	27.9	66.6	Iowa	**7.2**	†	5.4	15.0	28.5
15.9	4.0	15.7	31.8	54.1	Missouri	**6.9**	†	5.1	15.0	30.3
20.5	†	†	49.9	82.1	North Dakota	**13.6**	†	†	†	54.8
19.4	†	†	44.9	66.7	South Dakota	**8.5**	†	†	†	44.2
16.9	†	16.7	28.4	66.8	Nebraska	**6.7**	†	†	11.5	36.9
14.9	†	14.0	23.4	66.7	Kansas	**6.0**	†	†	11.2	26.0
19.7	7.0	17.2	37.8	67.7	South Atlantic	**8.5**	2.7	7.5	16.4	30.4
22.2	†	†	48.6	†	Delaware	†	†	†	†	†
20.6	6.7	17.6	40.9	72.9	Maryland	**9.1**	3.6	7.0	15.8	37.8
37.1	†	32.3	65.4	116.2	District of Columbia	**15.1**	†	†	35.9	†
20.0	6.4	19.3	37.8	66.6	Virginia	**8.5**	2.7	6.6	16.7	33.9
16.9	†	11.7	31.7	76.0	West Virginia	**6.0**	†	†	10.1	25.8
18.1	6.2	15.8	35.6	60.9	North Carolina	**7.8**	†	7.9	14.8	28.3
21.3	7.1	20.6	43.5	59.6	South Carolina	**9.5**	†	9.3	19.9	29.4
18.7	6.9	17.3	38.1	51.7	Georgia	**8.7**	†	9.3	16.9	28.6
19.6	7.5	16.3	36.3	70.6	Florida	**8.6**	3.5	6.8	16.7	28.4
18.3	5.9	15.6	37.3	62.2	East South Central	**9.0**	3.0	7.4	17.6	32.6
17.6	6.8	14.2	33.5	61.9	Kentucky	**8.2**	†	7.5	14.0	36.8
17.7	6.8	16.4	30.3	63.1	Tennessee	**8.3**	3.3	7.6	15.9	23.8
18.2	4.5	13.8	41.5	67.1	Alabama	**9.4**	†	7.5	20.0	31.5
20.7	†	19.6	48.5	53.9	Mississippi	**10.6**	†	6.5	22.2	43.9
18.8	6.1	17.4	36.1	63.0	West South Central	**9.2**	3.3	7.7	16.9	34.4
18.7	†	17.8	37.1	60.6	Arkansas	**8.6**	†	†	16.3	33.8
23.7	6.2	20.3	54.5	72.2	Louisiana	**11.1**	†	10.3	23.4	37.8
14.9	5.1	12.4	26.4	61.8	Oklahoma	**8.9**	†	8.3	17.5	29.2
18.3	6.4	17.7	32.9	61.3	Texas	**8.8**	3.4	7.4	14.8	35.0
18.4	6.4	15.1	37.1	62.6	Mountain	**9.1**	3.8	6.2	17.0	35.8
†	†	†	†	†	Montana	**10.4**	†	†	24.5	†
17.6	†	18.2	43.0	†	Idaho	†	†	†	†	†
†	†	†	†	†	Wyoming	†	†	†	†	†
18.0	†	13.4	45.3	56.6	Colorado	**8.5**	†	7.0	12.0	35.0
25.3	12.9	20.8	41.9	83.7	New Mexico	**14.3**	†	†	25.5	43.3
17.9	6.0	14.3	32.3	75.7	Arizona	**8.0**	†	4.8	15.9	37.9
15.5	†	†	30.4	64.6	Utah	†	†	†	†	†
21.7	†	21.3	46.5	†	Nevada	†	†	†	†	†
22.1	6.9	19.2	43.2	80.4	Pacific	**9.8**	3.3	8.4	17.1	40.1
17.9	4.6	15.9	35.3	68.6	Washington	**8.8**	†	6.6	19.7	31.8
16.9	†	14.4	33.1	66.5	Oregon	**7.8**	†	6.9	14.7	32.9
22.6	7.1	19.8	44.3	80.1	California	**9.7**	3.2	8.6	16.2	40.8
†	†	†	†	†	Alaska	†	†	†	†	†
44.4	17.1	35.4	74.6	187.2	Hawaii	**24.0**	†	17.1	40.6	103.8

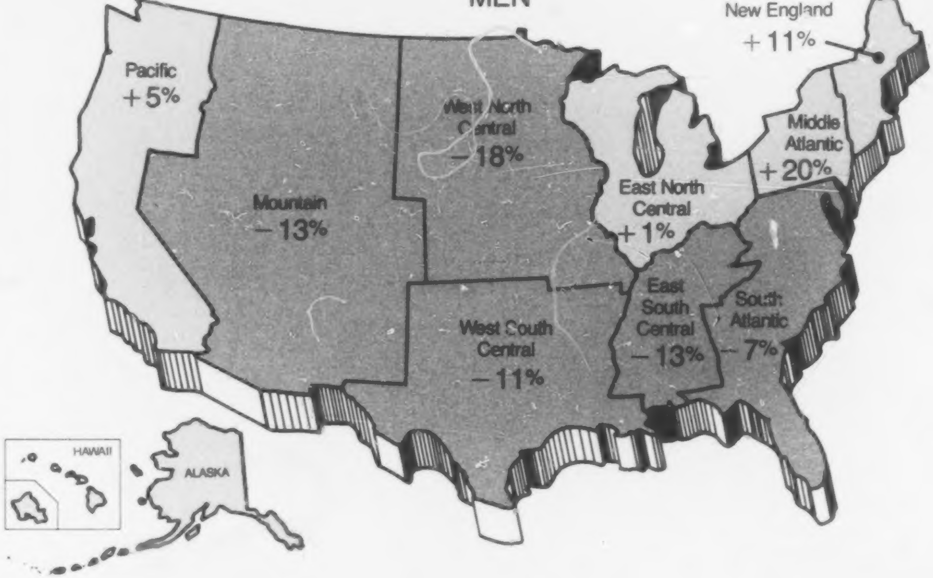
* Adjusted on basis of age distribution of the United States total population, 1940.

† Fewer than 20 deaths; rate not shown.

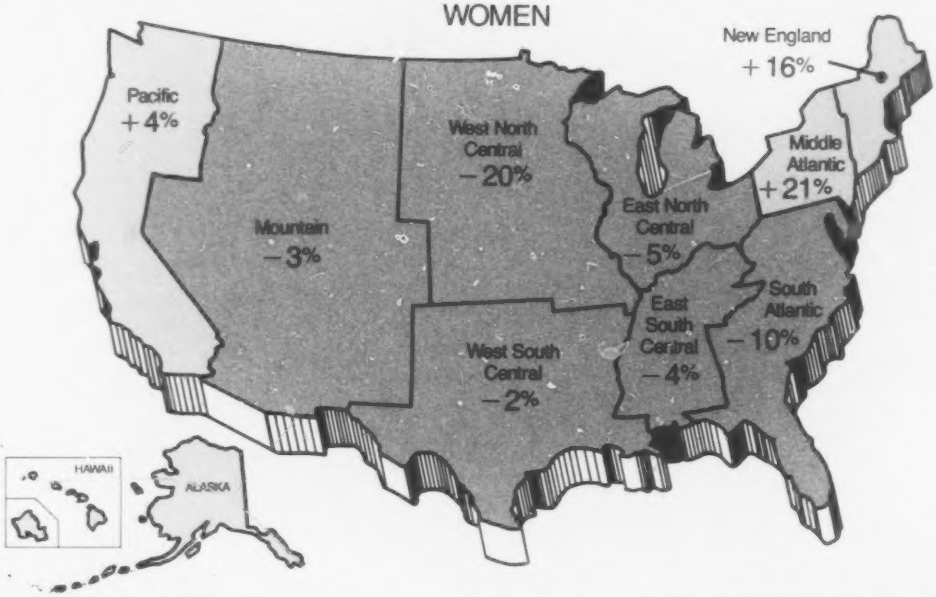
Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

Figure A — Geographic Variation* in Gastric Cancer Mortality Men and Women Aged 45–84, 1979–81

MEN


New England
+11%
Pacific
+5%
West North Central
−18%
Middle Atlantic
+20%
Mountain
−13%
East North Central
+1%
East South Central
−13%
South Atlantic
−7%
West South Central
−11%
HAWAII
ALASKA

WOMEN


New England
+16%
Pacific
+4%
West North Central
−20%
Middle Atlantic
+21%
Mountain
−3%
East North Central
−5%
East South Central
−4%
South Atlantic
−10%
West South Central
−2%
HAWAII
ALASKA

Source of data: Table

*Percent above or below the U.S. average.

population and deaths that occurred in 1979, 1980 and 1981. The data are presented for all men and all women, independently, for the years 1979 to 1981, inclusive. The death rates are those assigned to International Classification of Diseases, Ninth Revision, Code 151. These data represent the latest years for which official figures are available by state and for which Metropolitan Life statisticians could compute rates by geographic area. Mortality rates are shown per 100,000 population in four 10-year age groupings between 45 and 84 and for the ages 45-84 combined. The combined death rate has been age-adjusted to account for differences in the age distributions in the various states.

During 1979-81, a total of 43,309 gastric cancer deaths occurred across the U.S.; more than 60 percent were among men.

For the period 1979-81, a total of 43,309 gastric cancer deaths occurred across the United States. More than 60 percent of these deaths were among men and 83 percent were among whites. Among men, one-third of the deaths occurred between the ages of 65 and 74; for women, 31 percent of the stomach cancer deaths were registered between 75 and 84 years of age. During the 1979-81 study period, the age-adjusted gastric cancer mortality rates were 124 percent higher among the men than the women aged 45-84 in this country (see accompanying Table). The death rates per 100,000 population were more than twice as high for men than women in each of the four age groups studied; the largest differential was evident for men aged 55-64, where their rate was 138 percent higher than that reported for like-aged women.

As with most cancers, the gastric cancer mortality rate increased with age. For men the rates rose from 6.7 per 100,000 among 45-54-year-olds to 112.4 for men 85 years old and older (data not presented). For women, the rates increased more than 20 times between the ages 45-54 (3.0 per 100,000) and 85 and over (64.2 per 100,000). The rate of increase was similar between age groupings for each sex, with the largest increase apparent between the 45-54-year-olds and 55-64-year-olds, where the rates almost tripled for both men and women. The rate of increase slowed with each succeeding age group, thereafter, with only minor regional differences evident.

Regional Variation in Mortality

Gastric cancer death rates varied appreciably between geographic areas of the country, with similar patterns evident for men and women (Figure A). For both sexes, the same three areas within the United States registered age-adjusted death rates in excess of the national average of 21.1 for men and 9.4 for women. One additional area, the East North Central, had rates slightly higher than the national total for males only. The highest area mortality was recorded in the Middle Atlantic states, with rates 20 percent above the total for men and 21 percent above the total for women. The New England area registered the second highest rates, 11

The highest area mortality was recorded in the Middle Atlantic states, with rates 20 percent above the total for men and 21 percent higher for women.

percent above the average for men and 16 percent higher for women, followed by the Pacific area. The above-average rates in the Pacific area reflect the exceptionally high rates reported in Hawaii with its large Japanese migrant population. The lowest gastric cancer mortality rate was reported in the West North Central area, with rates 18 percent lower than the U.S. total for men and 20 percent below the average for women.

Variation in Rates by State — Men

The mortality rates also differed substantially between states (Figure B). Among men 45-84, the rate reported in Hawaii (44.4 per 100,000) was twice the male average and almost three times higher than the lowest rate recorded for men, which was in Oklahoma and Kansas (14.9). The second highest rate was reported in the District of Columbia, where the rate was 76 percent above the U.S. male average. Other states in which the rates exceeded the total by at least 20 percent were New York, New Jersey and New Mexico (24, 21 and 20 percent above average, respectively).

The lowest mortality rate for men (14.9 per 100,000) was recorded in Oklahoma and Kansas; this rate was almost 30 percent lower than the U.S. total for men.

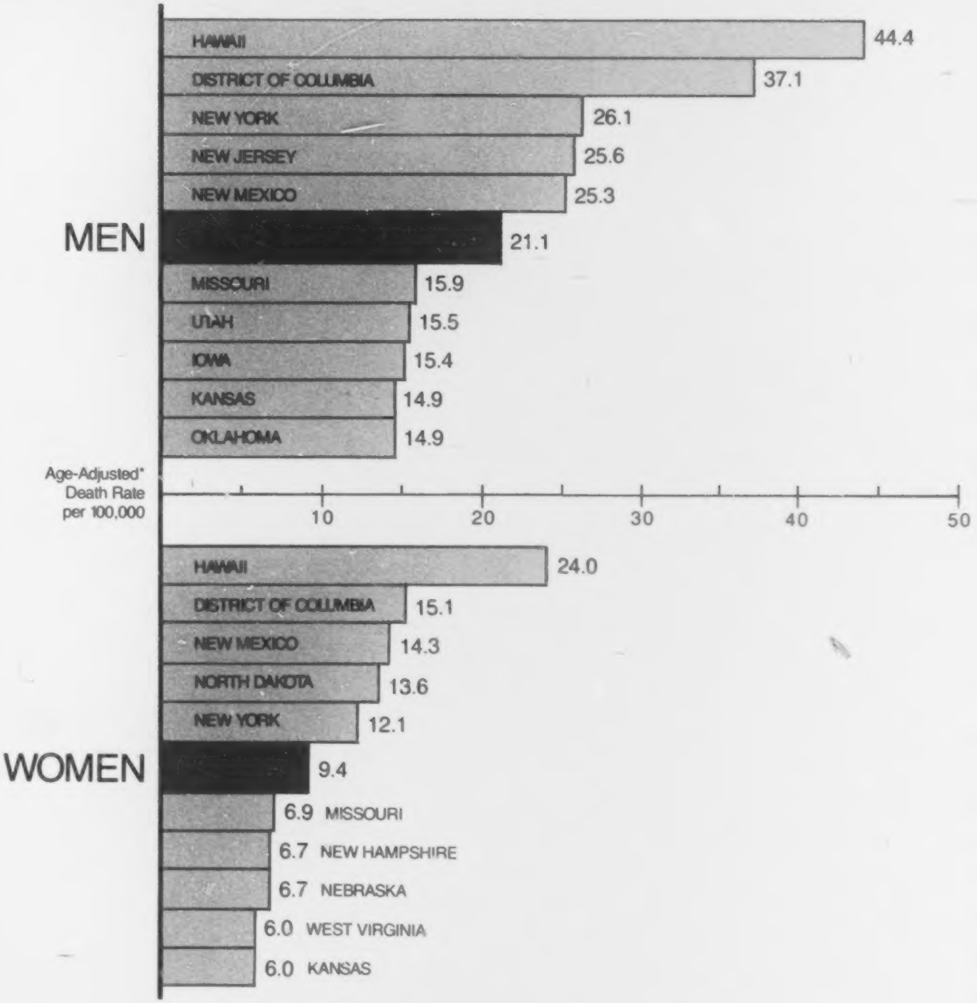
As mentioned, the lowest mortality rate for men (14.9 per 100,000) was recorded in Oklahoma and Kansas; this rate was almost 30 percent lower than the U.S. total for men. Iowa and Utah registered the third and fourth lowest rates, respectively. Missouri, Indiana, Oregon, West Virginia and Nebraska, each recorded death rates 20 percent or more below the average.

Variation in Rates by State — Women

On a state-by-state basis for women, the gastric cancer death rate in Hawaii (24.0 per 100,000) was four times higher than the lowest rate reported in Kansas and West Virginia (6.0 per 100,000). The District of Columbia registered the second highest mortality rate, a rate 61 percent above the female average for the country. Similar to the men, high death rates for women were recorded in New Mexico, New York and New Jersey, with rates all at least 25 percent above the average (Figure B). Kansas and West Virginia recorded the lowest rates (each 6.0 per 100,000 population), a rate 36 percent lower than the U.S. average. Nebraska, New Hampshire, Missouri, Indiana and Iowa experienced the next five lowest mortality rates, ranging from 29 to 23 percent below the total.

For women, the gastric cancer death rate in Hawaii (24.0 per 100,000) was four times higher than the lowest rate reported in Kansas and West Virginia (6.0 per 100,000).

Figure B — States With Highest and Lowest Mortality From Gastric Cancer, Population Aged 45 – 84, by Sex United States, 1979 – 81



*Adjusted on basis of age distribution of United States total population, 1940.
Source of data: Table.

Environmental Factors

The above-described regional variations in stomach cancer mortality rates are in line with the environmental/dietary hypotheses reported in the literature. The high rates in Hawaii are generally thought to be a reflection of the dietary practices of the largely Oriental population of the islands including a large proportion of Japanese migrants. As the Japanese become assimilated and adopt more Western eating habits, their originally high gastric cancer rates slowly decrease so that the rates in succeeding generations become more like those of the host country. The high rates reported in the District of Columbia may reflect the influence of socioeconomic conditions, nutritional factors as well as ethnicity.

> The high rates of gastric cancer in Hawaii are thought to reflect the dietary practices of the largely Oriental population including Japanese migrants.

With an estimated 24,600 new gastric cancer cases diagnosed annually, it is clear that much remains to be studied before the etiology of this deadly disease is understood.[2] Once the environmental agents are identified, perhaps preventive measures can be instituted. In the meantime, it seems only prudent to recommend a diet low in salted, smoked, and/or pickled foods and high in fresh fruits, vegetables, and vitamin C. ☐

References

[1] Page, H.S., Asire, A.J. *Cancer Rates and Risks: 3rd Edition*. NIH Pub. No. 85-691, Washington, D.C., U.S. DHHS, 1985.

[2] Silverberg, E., Lubera, J. "Cancer Statistics 1987." *Ca-A Cancer J. for Clinicians*. 37:2-19, 1987.

[3] Howson, C.P., Hiyama, T., Wynder, E.L. "The decline in gastric cancer: Epidemiology of an unplanned triumph." *Epidemiol. Reviews*. 8:1-27, 1986.

[4] Sandler, R.S., Holland, K.L. "Trends in gastric cancer sex ratio in the United States." *Cancer*. 59(5):1032-1035, 1987.

[5] Cordle, F. "The use of epidemiology, scientific data, and regulatory authority to determine risk factors in cancers of some organs of the digestive system. 5. Stomach cancer." *Regul. Toxicol. Pharmacol.* 6(2):171-180, 1986.

[6] Macdonald, J.S., Cohn, I. Jr., Gunderson, L.L. "Chapter 21: Cancer of the Stomach." *Cancer: Principles & Practice of Oncology: Second Edition*. DeVita, V.T. Jr., Hellman, S., Rosenberg, S.A. (eds.). Philadelphia, J.B. Lippincott Company, 1985.

[7] Dunham, L.K., Bailor, J.C., III, "World maps of cancer mortality rates and frequency ratios." *JNCI*. 41:155-203, 1968.

[8] Holleb, A.I., Subak-Sharke, G.J., White, W.H., Kasofsky, P. (eds.) *The American Cancer Society Cancer Book*. New York: Doubleday & Company, Inc., 1986.

[9] Ramming, K.P., Haskell, C.M. "Chapter 13: Stomach Cancer." *Cancer Treatment: Second Edition*. Charles M. Haskell (ed.). Philadelphia, Pa., W.B. Saunders Company, 1985.

STATISTICAL INFORMATION, PLEASE

Q **What is the average height and weight in the U.S. population, by sex?**

A According to the latest Health and Nutrition Examination Survey, 1976-80 (HANES II), the average height of the U.S. population aged 18-74 was 69.1 inches for men and 63.7 inches for women. Ten percent of the men were 72.6 inches or taller, only 10 percent were under 65.5 inches. Of the women, 10 percent were below 60.5 inches tall, and 10 percent were more than 67.0 inches. The average weight of the U.S. population was 172.2 pounds for men and 144.2 pounds for women.

* *

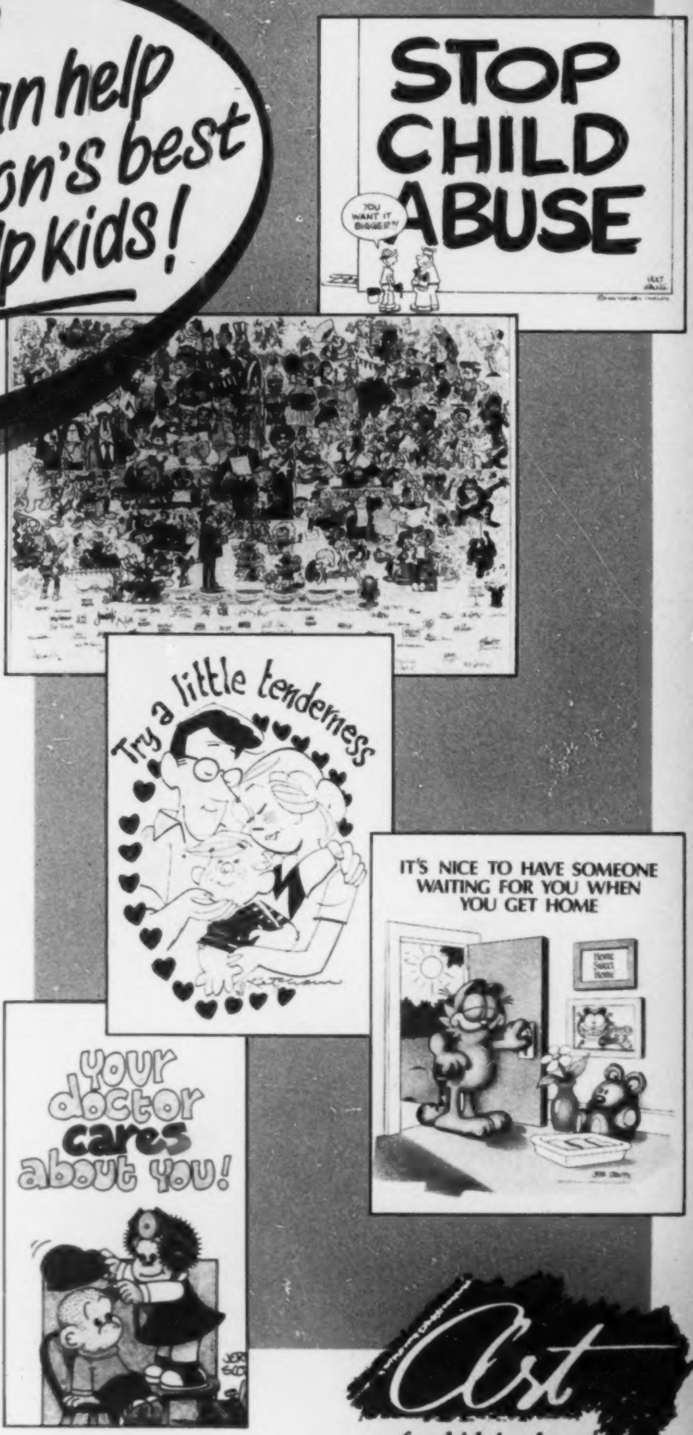
Q **What is the estimated cost of raising a child to age 18?**

A The cost of raising a child to age 18 continues to escalate. According to a Department of Agriculture report for 1986, an urban family on a moderate budget should allow for more than $92,000 if they reside in the Midwest region of the United States. For families living in the Northeast, the figure was over $97,000, while in the South it amounted to more than $100,000 and was nearly $103,000 in the West. The estimates were based on cost and consumption surveys for food, clothing, housing, medical care, education and other expenses such as personal care, recreation and miscellaneous activities.

* *

Please send your questions to: Statistical Information Editor
Health and Safety Education Division, Dept. SB
Metropolitan Life Insurance Co.
One Madison Avenue
New York, NY 10010-3690

You and your organization can help some of the nation's best cartoonists help kids!


STOP CHILD ABUSE
YOU WANT IT BIGGER?!
Try a little tenderness
IT'S NICE TO HAVE SOMEONE WAITING FOR YOU WHEN YOU GET HOME
Home Sweet Home
your doctor cares about you!

JOIN ART FOR KIDS' SAKE!

Available:

- Special posters
- Colorful notecards
- Signed editions by 90 popular cartoonists
- All with vital messages
- And more.

For details on how you can help America's children become a priority, contact:

Institute for Child Mental Health
22 East 28th Street
New York, NY 10016
(212) 725-8955

Art
for kids' sake

Child Welfare League of America, Inc.

Coming in Future Issues

- U.S. Life Expectancy Tables
- Health Status of Older Americans
- Infant Mortality: International Variations
- Alcoho[illegible]d Motor Vehicle Deaths

Prevention Award
for
Public Private Partnership
Metropolitan Life Insurance Company
Statistical Bulletin
October - December 1987
Otis R. Bowen, M.D.

Special Award From the Department of Health and Human Services

A special award from the U.S. Department of Health and Human Services was given recently to Metropolitan Life and the **Statistical Bulletin** for their longstanding commitment to preventing alcohol and other drug problems among youth.

In presenting the award on behalf of Secretary Otis R. Bowen, M.D., Assistant Secretary for Public Affairs, Stephanie Lee-Miller expressed the government's appreciation for a feature article on childhood alcohol use in the October-December 1987 **Bulletin**, and for publishing Dr. Bowen's commentary on ways to help avert drug and alcohol use among children.

Met Life was cited for exemplary programs to help educate young people about the dangers of alcohol use. Acknowledgement was also extended to Met Life and to the **Bulletin** for promoting the government's campaign urging 8-12-year-olds to resist peer pressure and "Just say no!" to alcohol.

Historical Perspectives

30 YEARS AGO

IN THE 1958 STATISTICAL BULLETIN

Metropolitan Life celebrated its 90th birthday in 1958. Over those 90 years, the Company had played an active role in promoting health and financial security throughout the United States and Canada. In recognition of this milestone, statisticians chronicled the Company's contributions to health conservation. Gains in longevity, achievements in medicine, control of infectious diseases and decreased infant mortality were major advances made throughout both the United States and Canada. Met Life had made substantial contributions toward most of these improvements. The Company-sponsored Framingham, Mass., demonstration, for example, showed how tuberculosis could be drastically reduced. The Influenza-Pneumonia Commission, organized and financed by Metropolitan, helped to develop pneumonia sera, and later contributed to the wide use of the newer drugs that proved effective in treatment. In Thetford Mines, Quebec, Metropolitan demonstrated how infant mortality could be greatly reduced. In 1958 the T.B. death rate in the United States was about 8 per 100,000, compared with 194 in 1900; mortality from influenza and pneumonia decreased to just over 35 per 100,000 in 1957, from 202 in 1900; the infant mortality rate was down to 26 per 1,000 live births—one-fifth of the level at the turn of the century. The rise of Metropolitan's eminence paralleled the rapid population growth of the United States and Canada. By 1958 over 41 million persons in the U.S. and Canada (one-fifth the population of both countries) were insured by Met Life. (Currently Met Life is sponsoring various social and health promotion programs such as The Chemical People, an anti-drug program, "Healthy Me," targeting school health education, and, through President Creedon's efforts, is participating in the President's Commission on AIDS.—ed.) (Page 2, February) □

Numerous statistical studies to determine the relationship between heart disease mortality and socioeconomic status revealed diverse results. Met Life statisticians compared the mortality experience of Industrial policyholders—mainly low-income wage earners—with that of Ordinary policyholders in the higher income brackets. Industrial policyholders recorded higher mortality at every age. Other studies in Baltimore and Chicago yielded similar results. On the other hand, a 1938-42 study showed that mortality from coronary artery disease among U.S. physicians was almost twice that of men in the general population. According to a British study for the period 1947-50, the death rate from coronary disease at ages 40-59 was 70 percent higher among general practitioners than among men in the general population. Two other studies, one by the Registrar General of England and Wales and another in Scotland, showed excess mortality from coronary disease among professionals and executives. A study among transport workers in London revealed that bus conductors had lower death rates from heart disease than did drivers. Another study among English postal workers found that carriers had lower mortality than employees in sedentary jobs. In general, however, there was a lack of consistency in the findings among the various studies. (Page 6, March) □

About 345,000 people in the U.S. were challenged by total blindness or impaired vision in 1958, according to Metropolitan Life statisticians. Further, about 30,000 or 17 per 100,000 new cases were added annually. Blindness was more prevalent in older people; slightly more than half were 65 years old or older and about 30 percent were aged 40-64. Glaucoma and cataracts accounted for nearly one-third of all blindness, and degenerative disorders and diabetes accounted for about one-seventh of the total. Other factors, such as infectious diseases, prenatal and hereditary disorders, accounted for smaller proportions. The rate was substantially higher among men than women, partly because of a higher incidence of accidents causing blindness, and earlier development of arteriosclerotic and other degenerative changes among men. The rate was also higher in the nonwhite population. Geographically, the lowest rates were in the Northwest and the Far West, and the highest rates in the South and Southwest. A study in Baltimore showed that half the cases could have been prevented by early diagnosis and treatment. Periodic health checks including examination for glaucoma and cataract as well as for changes due to degenerative vascular diseases would help reduce the incidence of blindness. (Currently there are about 1.5 million persons with severe vision impairment in the U.S. population—ed.) (Page 6, October) □

Reporting on the hazards of plural births, Met Life statisticians stated that the chances of being born alive and surviving the first year of life were distinctly lower for children in plural births. And the hazards increased in each higher birth order. Plural births accounted for only 2 percent of all births in the U.S. in the late 1950s but were responsible for about 6 percent of the fetal deaths and for nearly 10 percent of all infant deaths. The fetal death rate among twins in 1956 was 43.6 per 1,000 live births compared with a rate of 15.6 per 1,000 for single births; for other plural deliveries the corresponding rate was 80.6. Infant mortality among twins was highest for those whose mother was under age 20 and was distinctly higher for nonwhite than white babies, irrespective of the mother's age. Deaths ascribed to prematurity accounted for about half of all neonatal deaths among plural birth infants—a rate about 9 times that for single births. Irrespective of birth weight, both fetal and neonatal death rates were higher for the second-born of twins. Identical twins experienced higher neonatal death rates than did fraternal twins. It was suggested that multiple birth hazards could be reduced by early detection and continuous prenatal medical supervision, with precautions to prevent nutritional deficiencies. Improved obstetric practices would lessen the hazards to the second and later born of the same plural set. (Page 3, November) □

4/12/88 B6045-1 A

Metropolitan Life
AND AFFILIATED COMPANIES

SB
STATISTICAL BULLETIN

Vol 69 No 2 Apr – Jun 1988

2 **Infant Mortality, 1986: National and International Differences.** How does the U.S.A. measure up? A comparative analysis that conveys both good and bad news.

9 **A Test of Compassion.** In this sobering commentary, Sara Rosenbaum, Director, Health Division of the Children's Defense Fund, offers insights into the complexities affecting our nation's infant death rates.

10 **Older Americans' Health.** How well are the nation's oldest citizens? This analysis gives a picture of the common impairments of the elderly and how they, themselves, view their own health.

17 **The Challenge of an Aging Population.** James B. Weil, Vice-President, Senior Services at Met Life, raises critical questions concerning the growing needs of the elderly.

20 **Costs of an Appendectomy: Regional Variations.** Study explores significant geographic differences for this common surgical procedure.

27 **Population Slowdown in the United States.** What's behind the trend toward stability? A demographic overview showing state variations.

Contents

Statistical Bulletin, Vol. 69, No. 2, Apr.–Jun. 1988

1 From the Editor's Desk

2 Infant Mortality, 1986: National and International Differences

9 Commentary: A Test of Compassion
Sara Rosenbaum, Director, Health Division
Children's Defense Fund

10 Older Americans' Health

17 Commentary: The Challenge of an Aging Population
James B. Weil, Vice-President, Senior Services
Metropolitan Life Insurance Company

18 Capsule Briefs

20 Costs of an Appendectomy: Regional Variations

27 Population Slowdown in the United States

35 Statistical Information, Please

Back Cover: Historical Perspectives

John J. Creedon
President and
Chief Executive Officer

Donald A. Odell
Executive Vice-President

Paul S. Entmacher, M.D.
Senior Vice-President and
Chief Medical Director

Doris Bressler
Director
Health and Safety Education

Charles B. Arnold, M.D., M.P.H.
Editor-in-Chief

Joan W. Parks
Managing Editor

Stanley Kranczer
Margaret Mushinski
Contributing Editors

Hazel Forbes
Associate Contributing Editor
and Editorial Quality Editor

Ada Arieta
Editorial Assistant

Stanley Kranczer
Business Manager

Guru S. Bale, Ph.D.
John Sentowski
Technical Specialists

Corporate Health Strategies
Data Contributor

Paul Verga
Art Director

Lawrence Studio, Inc.
Graphic Design

The Statistical Bulletin (ISSN 0741-9767) Copyright 1988 Metropolitan Life Insurance Company, One Madison Avenue, New York, NY 10010. Published four times a year by Metropolitan Life Insurance Company. John J. Creedon, President and Chief Executive Officer; Robert G. Schwartz, Chairman; Arthur G. Typermass, Senior Vice-President and Treasurer; Richard M. Blackwell, Vice-President and Secretary. Printed in U.S.A. Subscriptions: U.S., its territories and Canada: $50 for one year; libraries $40 (U.S. currency). Outside U.S. and Canada add $10 for postage and handling. Send to: Statistical Bulletin, P.O. Box 64187, Baltimore, MD 21264. Postage paid at New York, N.Y.

Postmaster: send address changes to Williams and Wilkins, 428 E. Preston St., Baltimore, MD 21202.

Letters will be published at the discretion of the editor as space permits and subject to editing and abridgment. They should be typewritten double-spaced. Send to:
Statistical Bulletin, 16UV
Metropolitan Life Insurance Company
One Madison Avenue, New York, NY 10010

From the Editor's Desk

The leadership in international infant mortality rates remained among the European countries in 1986, as shown in *SB*'s study "Infant Mortality, 1986: National and International Differences." The U.S.A. was again near the bottom primarily because of the disparity in rates among races. Within the U.S., the good news in 1986 was that total rates continued to decline and had achieved their lowest recorded levels. The bad news was that black Americans still had an infant mortality rate twice that of whites. Virtually all efforts to explain why that difference persists, however, have been unflattering to this country.

Infant Mortality Statistics: Some Insights

In a commentary, Sara Rosenbaum, Director, Health Division, Children's Defense Fund, offers some further insights into the complex social, economic and policy issues that contribute to the wretched statistics for America's babies. Because of the *CDF*'s longstanding commitment to the health and welfare of infants and children, her remarks offer help, but not much comfort, to all who want less suffering among children everywhere.

Problems Confronting Older Americans

At the other end of life, fascinating and disturbing problems confront the U.S. The article "Older Americans' Health" notes that surveyed older Americans, on the average, are not only living longer than ever before, but *for the plurality* those extra years are reported to be encumbered with disabilities. Increasing age and/or black ethnicity were two attributes linked to greater disability. Surprisingly, men and women reported the same degree of disability after age 65.

In a commentary, Vice-President James Weil of Met Life's Group Department describes the challenge to the United States to provide health and social living protection for the very elderly. Whether Americans will develop programs to protect their "old-old" citizens remains an open question. Regardless of the public's response, his commentary sets forth several key parts of this issue.

Cervix Cancer Culprit?

For the middle of life comes good news in *Capsule Briefs* about cervix cancer. It has been a cruel disease, often striking women in their late 30s, usually requiring hysterectomies, or worse if invasive. A study by French investigators strongly supports the hypothesis that certain papillomaviruses may cause these cancers.

Appendectomies in the U.S.

While one rarely seems to hear of appendectomies in the U.S. these days, did you know that in 1986 there were 275,000 such procedures performed in short-stay hospitals? That fact and others related to the distribution and regional cost variations of this surgery are featured in this issue of *SB*. How did your region and your state compare with respect to the numbers and the costs?

Population Stability: U.S.A.

As *SB* shows in "Population Slowdown in the United States," the age and sex distribution of the U.S. population is beginning to appear stable demographically. It is highly likely that the transition into population stability will have profound social and economic effects during the next 75 years. While that does seem like a long time, *SB* looks forward to analyzing and reporting those changes to you, and to your progeny as well.

On that note of anticipation, I wish you good reading. □

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Infant Mortality, 1986: National and International Differences

Large disparities in infant mortality rates and in the rate of improvement continue to exist throughout the world. Infant mortality has been decreasing in the United States and in most industrialized countries for more than 75 years. The many factors that have contributed to these lower infant death rates have been diverse, including improved sanitation conditions, increased access to and utilization of health care, development and distribution of immunization regimens, and expansion of prenatal, maternal and child health services and educational programs. Despite these advances, the U.S. infant mortality rate remains alarmingly high and may have reached a plateau.[1-3]

In 1986 an estimated 3.8 million babies were born in the United States and 38,600 died within their first year, primarily because of low birth weight.[4,5] The majority of these deaths (almost 70 percent) occurred in the first 28 days of life—the neonatal period. The neonatal deaths are generally thought to be associated with prematurity and low birth weight and primarily affected by prenatal and natal conditions. Postneonatal deaths (28 days through 11 months), on the other hand, are more likely associated with socioeconomic factors.[1,5,6]

The U.S. infant mortality rate reached an all-time low in 1986—10.4 per 1,000 live births.

The U.S. infant mortality rate reached an all-time low in 1986—10.4 per 1,000 live births. While this record low is to be applauded, it represented only a 1.9 percent improvement over the previous year's rate, and indications are that the rate of decrease is continuing to level off.[1,7] The 1985-86 rate of decline was about half that experienced between 1983 and 1984 and is considerably below the average annual percentage decrease experienced for decades through 1983.[1] This slow decline, in large part, accounts for the United States' continued unfavorable international standing. During the early to mid-'50s, the U.S. infant death rate ranked sixth out of 20 selected developed countries; for the 1980-85 period, however, the U.S. rate was tied for last place among these countries.[2]

International Comparisons

The current differences in these important vital statistics were examined by Metropolitan Life Insurance Company epidemiologists, using unpublished 1986 statistics from the United Nations Children's Fund and published and unpublished provisional and final data from the National Center for Health Statistics.

Table 1 presents the infant mortality rates per 1,000 live births for the total U.S. population and 20 selected foreign countries. Of the 21 industrialized countries considered, only four reported higher infant mortality rates than the U.S. average for 1986. (It should be noted that the 1985 black rate was the same as the high rate reported in Portugal during 1986.) Encouraging rate decreases were evident for all countries between 1960 and 1986, with the largest decrease experienced in Spain and Japan. Australia and New Zealand registered the least improvement in infant mortality during this period (–51 percent). While the infant mortality rate in the United States dropped more than 60 percent over the 27 years, the rate of decline was the fifth slowest of all the countries considered.

The U.S. 1986 infant mortality rate was tied for 16th place among 21 industrialized countries.

Table 1—Infant Mortality Rates In Selected Countries,* 1960 and 1986

	1986 Population (In Millions)	1986 Births (In Thousands)	Infant Mortality Rate (Per 1,000 Live Births)		
			1960	1986†	Percent Change 1960 – 86
United States	240.1	3,789	25.5	**10.0**	– 61
Canada	25.7	384	28.0	**8.0**	– 71
Northwestern Europe					
Denmark	4.1	56	21.5	**7.0**	– 67
Norway	4.2	49	18.5	**7.0**	– 62
Sweden	8.3	87	16.0	**6.0**	– 63
Finland	4.9	63	22.0	**6.0**	– 73
Netherlands	14.6	173	17.5	**8.0**	– 54
United Kingdom	56.1	743	23.0	**9.0**	– 61
Ireland	3.7	79	31.0	**9.0**	– 71
Belgium	9.9	122	31.0	**9.0**	– 71
France	54.8	765	29.0	**8.0**	– 72
Germany, Fed. Rep.	60.7	636	32.5	**9.0**	– 72
Germany, Dem. Rep.	16.8	240	37.5	**9.0**	– 76
Switzerland	6.4	70	21.5	**7.0**	– 67
Southwestern Europe					
Spain	38.8	580	46.5	**9.0**	– 81
Italy	57.3	658	44.0	**11.0**	– 75
Portugal	10.3	172	81.0	**18.0**	– 78
Other					
Israel	4.3	94	32.5	**14.0**	– 57
Japan	121.4	1,522	30.5	**6.0**	– 80
Australia	15.9	249	20.5	**10.0**	– 51
New Zealand	3.3	60	22.5	**11.0**	– 51

*Source: Unpublished linear projections, using United Nations population data, United Nations Children's Fund, 1987.
† 1986 rates are rounded to the nearest whole number.

According to these 1986 data, the United States was tied for 16th place among these industrialized countries. The Scandinavian countries (Sweden, in particular) continue to show the best infant mortality record and Portugal the worst. Sweden, Finland and Japan each reported that 6 out of every 1,000 infants born in 1986 died before the age of one. This is contrasted with the Portugese rate of 18 per 1,000 live births. The continuing disappointing ranking of the U.S. infant mortality rates has been attributed to the high rates of low-birth-weight (5.5 pounds and under) babies, the increasing numbers of teenage mothers—mothers who account for large proportions of these low-birth-weight infants—and to the inequitable provision/use of maternal and pre- and postnatal health care.[1,2,4]

Table 2—United States Infant Mortality Rates per 1,000 Live Births, 1984 to 1986

Area	1984	1985	1986	1984 – 86 Percent Change	1986 Rank
United States	10.8	10.6	10.4	−3.7	
New England	9.4	9.2	8.4	−10.6	I
Maine	8.4	9.1	7.7	−8.3	4
New Hampshire	10.2	9.3	7.2	−29.4	3
Vermont	8.7	8.5	8.2	−5.7	7
Massachusetts	9.0	9.1	7.9	−12.2	6
Rhode Island	9.9	8.2	9.9	—	24
Connecticut	10.4	10.0	9.4	−9.6	16
Middle Atlantic	10.8	10.8	10.4	−3.7	VI
New York	11.0	10.8	10.7	−2.7	34
New Jersey	10.9	10.6	8.4	−22.9	9
Pennsylvania	10.4	11.0	11.0	5.7	37
East North Central	11.2	10.9	10.7	−4.5	VII
Ohio	10.4	10.3	9.8	−5.8	22
Indiana	11.1	10.9	10.8	−2.7	36
Illinois	12.1	11.7	11.8	−2.5	46
Michigan	11.7	11.4	11.4	−2.6	41
Wisconsin	9.9	9.1	8.9	−10.1	12
West North Central	9.6	9.5	9.8	2.1	IV
Minnesota	8.9	8.8	9.3	4.5	14
Iowa	8.8	9.5	7.9	−10.2	5
Missouri	10.4	10.2	11.4	9.6	42
North Dakota	8.1	8.5	9.5	17.3	17
South Dakota	10.0	9.9	11.6	16.0	44
Nebraska	9.6	9.6	10.2	6.3	28
Kansas	10.1	9.3	8.3	−17.8	8
South Atlantic	12.2	12.1	11.7	−4.1	IX
Delaware	10.8	14.8	11.2	3.7	38
Maryland	11.8	11.9	10.3	−12.7	29
District of Columbia	21.0	20.8	19.6	−6.7	51
Virginia	12.1	11.5	10.5	−13.2	31
West Virginia	11.0	10.7	10.5	−4.5	30
North Carolina	12.4	11.8	11.7	−5.6	45
South Carolina	14.7	14.2	13.1	−10.9	49
Georgia	12.9	12.7	12.3	−4.7	48
Florida	10.8	11.3	11.3	4.6	39
East South Central	12.6	12.1	11.6	−7.9	VIII
Kentucky	11.5	11.2	9.2	−20.0	13
Tennessee	11.8	11.4	11.4	−3.4	40
Alabama	12.9	12.6	13.9	7.8	50
Mississippi	14.4	13.7	11.5	−20.1	43
West South Central	10.8	10.4	10.4	−3.7	V
Arkansas	10.9	11.6	9.6	−11.9	19
Louisiana	12.1	11.9	12.1	—	47
Oklahoma	11.0	10.9	10.6	−3.6	32
Texas	10.5	9.8	10.1	−3.8	27
Mountain	9.7	9.8	9.6	−1.0	III
Montana	8.8	10.3	7.0	−20.5	2
Idaho	9.8	10.4	10.8	10.2	35
Wyoming	11.1	12.2	6.9	−37.8	1
Colorado	10.2	9.4	9.5	−6.9	18
New Mexico	9.6	10.6	10.7	11.5	33
Arizona	9.5	9.7	9.8	3.2	23
Utah	9.1	9.6	9.8	7.7	21
Nevada	10.5	8.5	9.7	−7.6	20
Pacific	9.6	9.7	9.0	−6.3	II
Washington	10.2	10.7	10.1	−1.0	26
Oregon	9.9	9.9	8.9	−10.1	11
California	9.4	9.5	8.8	−6.4	10
Alaska	11.2	10.8	10.0	−10.7	25
Hawaii	9.9	8.8	9.4	−5.1	15

Source of basic data: Reports from the National Center for Health Statistics and the Bureau of the Census.

U.S. infant mortality rates reflect disproportionately high rates among the nonwhite, principally black, population.

The relatively high infant mortality rates in the United States are also a reflection of the disproportionately high rates among the nonwhite, particularly the black, population (Figure A). In 1985, the last year for which rates by race are available, 18.2 black babies died within the first year of life for every 1,000 born. This rate is contrasted to that of 9.3 for white and 15.8 for all nonwhites in the United States. As seen in Figure A, the infant mortality rate for blacks has remained almost twice that for whites since the 1940s.[2] While the rates have been decreasing for both races in the United States, total infant mortality remains unacceptably high and the disparity between the races unconscionable.

Black infant mortality rates have remained around twice those of whites since the 1940s.

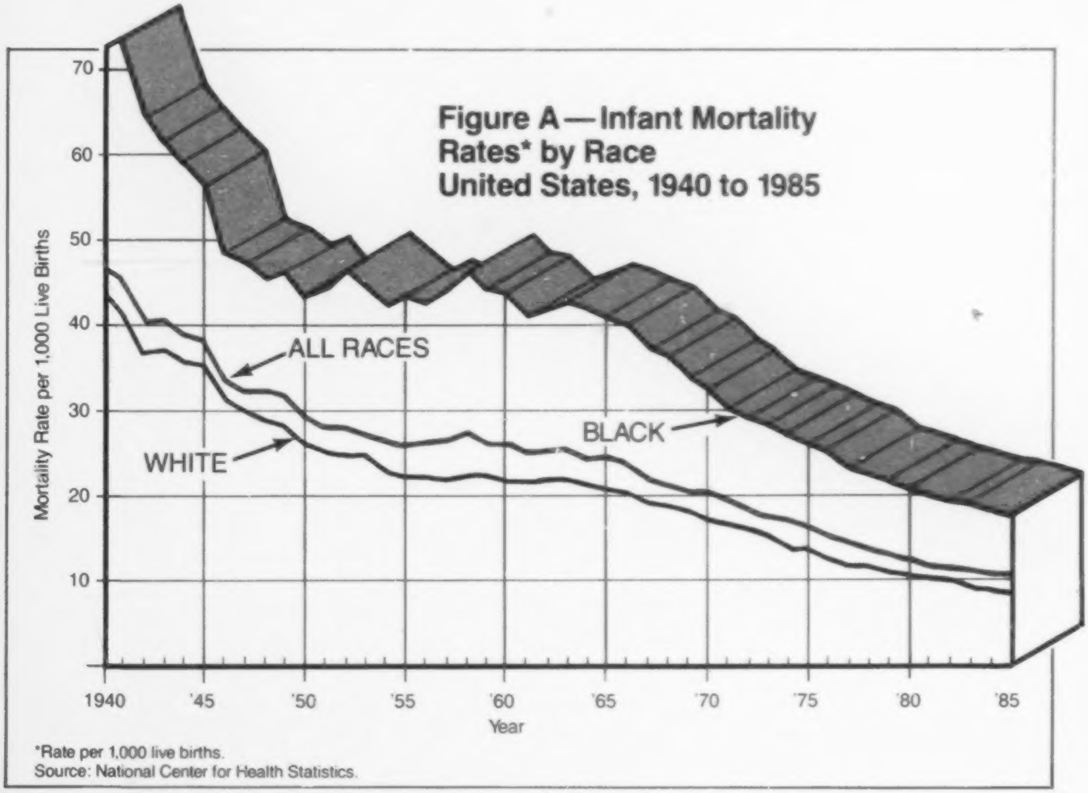


Figure A — Infant Mortality Rates* by Race United States, 1940 to 1985

*Rate per 1,000 live births.
Source: National Center for Health Statistics.

United States Differences

Major interstate and regional differences exist in infant mortality rates (Table 2). While a number of states compare relatively favorably with countries in Western Europe, not one state recorded a rate as low as that in Finland, Sweden or Japan. Infant death rates in Wyoming, Montana and New Hampshire approached this level with rates of 6.9, 7.0 and 7.2, respectively. Not only was the Wyoming rate the best in the country in 1986, it also was the one that showed the most improvement, moving Wyoming from No. 36 in 1984 to No. 1 in 1986.

Wyoming led the states with the lowest infant mortality rate for 1986—the worst record was held by the District of Columbia.

With only a few exceptions, the highest rates were recorded in the southern states. Of the 10 states with the worst mortality record, only four, Illinois, Michigan, Missouri and South Dakota, were not in the southern region of the country. The District of Columbia led all with the highest infant mortality rate. In the District, almost 20 babies per every 1,000 live births died before the age of one—a rate that exceeded the total U.S. average by close to 90 percent. Alabama and South Carolina recorded the next highest infant mortality with rates 34 and 26 percent, respectively, above the norm for the country (Figure B).

Between 1985 and 1986, the United States experienced an overall 1.9 percent decrease in infant mortality (Table 2). (Proportionate changes have been calculated between the years 1984 and 1986.) One region of the country, West North Central, registered an increase in the infant death rate of 2.1 percent, with North and South Dakota reporting staggering 17.3 and 16.0 percent increases, respectively. Surveys have documented the relationship between availability and utilization of prenatal care and birth outcomes. In a 1984 survey, it was discovered that 21.5 percent of all babies born in South Dakota were born to a mother with late or no prenatal care.[2] Kansas and Iowa were the only states in this region to register a decrease in rates, but these were not sufficiently high to offset the rate for the entire region.

Between 1984 and 1986, 13 states experienced increases in infant mortality rates and two saw no changes. More than half of those with increased rates originally had been among the states with the 20 best mortality records in 1984. With the exception of North Dakota, which gave up its No. 1 position in 1984 to become ranked 17th in 1986 and Minnesota, which dropped from sixth to 14th place, the other states each fell out of the top 20 group. The largest proportionate increases were registered in the Dakotas followed by increases of more than 10 percent in Idaho and New Mexico. Neither Louisiana nor Rhode island experienced a change in the 1984 rate.

Six states, Wyoming, New Hampshire, New Jersey, Montana, Kentucky and Mississippi, countered these increases with rate decreases equal to or larger than 20 percent. The rate in Wyoming dropped 38 percent between 1984 and 1986 and the rate in New Hampshire dropped 29 percent from 10.2 to 7.2 per 1,000 live births. These decreases are encouraging, indeed, but experts do not expect similar improvements to be widespread or long lasting. It can only be hoped, however, that such fluctuations will not only continue but accelerate and that substantial improvement in infant mortality can be achieved. The regional differences that exist in risk of this early death and the fact that the rate in the United States is higher than at least 15 other developed countries, suggest that improvements are indeed possible.

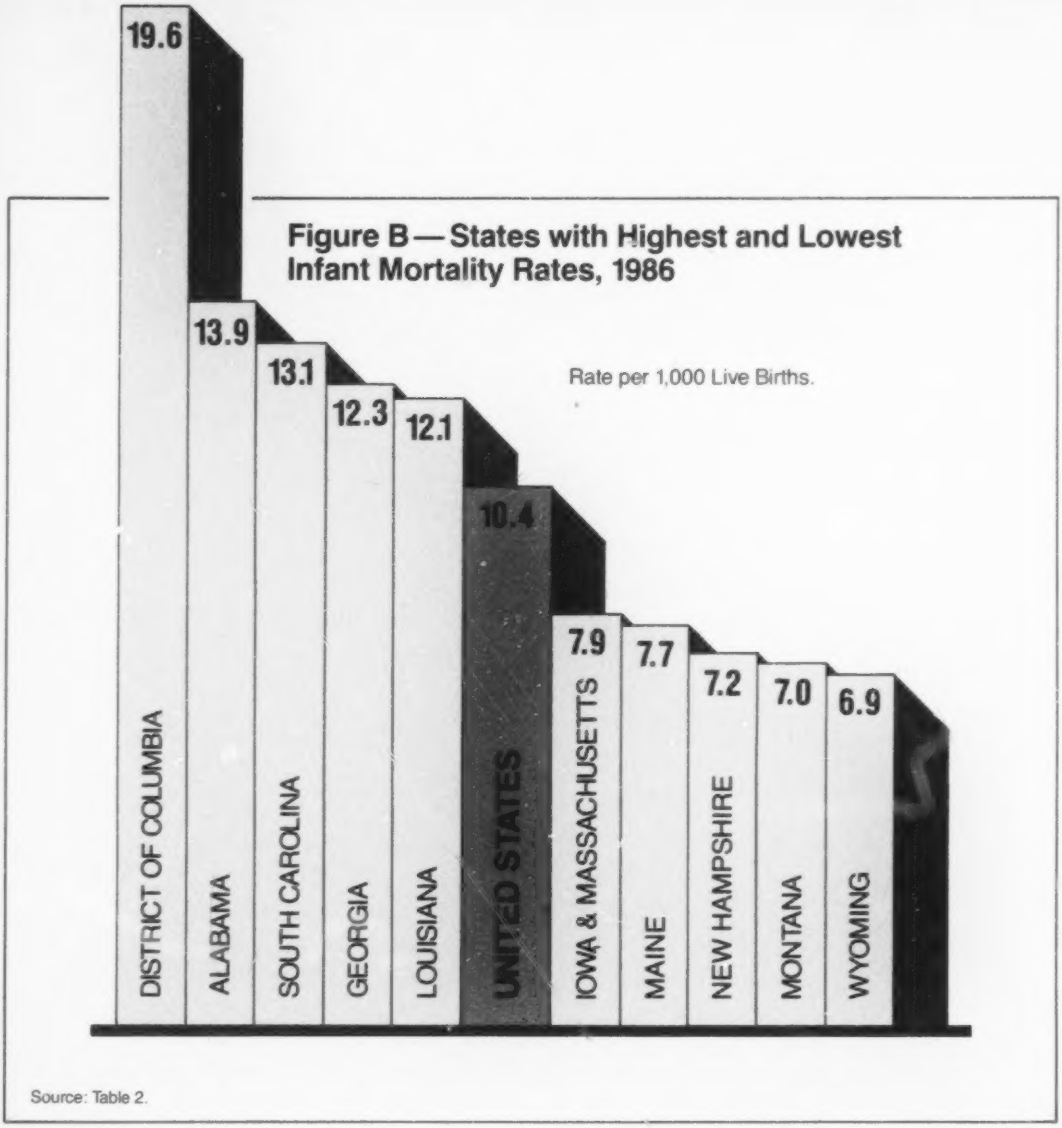


Figure B — States with Highest and Lowest Infant Mortality Rates, 1986

Source: Table 2.

What To Do

In an effort to better understand this phenomenon and to work toward ameliorating it, the National Infant Mortality Surveillance (NIMS) project was organized in 1980 to monitor and study U.S. infant mortality. A consortium of Public Health Service agencies and states collaborated to develop a national data base from linked birth and infant death certificates, such linkages and in-depth surveillance had not taken place since 1960. The results of [illegible] of this project comprised a special issue of *Public Health Reports* and outlined the necessary measures to be taken to help improve infant survival rates and detail the important predictors of risk for infants in this country.[8]

One of the major findings of the NIMS project was that birth weight was the most important predictor of survival with "exponential improvements" evident with the achievement of optimum birth weight. Further, it was acknowledged that overall risk of infant fatality was associated with maternal social class, and access to and availability of effective prenatal and infant health care, particularly among the black population. Phase II of the project is scheduled to begin with the 1983 birth cohort and provide annual detailed infant mortality data.[8,9]

Improvement in the infant mortality rate continues, but more attention must be directed to the disparity in rates between whites and blacks.

It is clear that not until the socially and financially disadvantaged mothers and infants have access to and utilize prenatal health care will the persistent racial differences in infant mortality diminish. Primary prevention programs aimed at low-income women must be made more available to help reduce prematurity and low birth weights among high risk women, particularly teenagers and minorities. Once such services are widely available, the racial disparity in infant mortality will be reduced, with an obvious positive influence on the overall U.S. rate. The ultimate goal continues to be to improve our international standing in infant mortality, and this can only be accomplished by aggressive actions directed at high-risk women.

In addition, research needs to continue in order to better understand the factors associated with neonatal versus postneonatal risk and to determine the causes of "excess black mortality rates in normal-birth-weight neonates." All these activities share an interest in improving the health of white and minority newborns toward a goal of better health for our entire population.[10-12] □

References

[1] Miller, C.A. "Infant mortality in the U.S." *Scientific American* 253(1):31-37, July 1985.

[2] Hughes, D., Johnson, K., Rosenbaum, S., Simons, J., Butler, E. *The Health of America's Children: Maternal and Child Health Data Book.* Washington, D.C.: 1987.

[3] Starfield, B. "Postneonatal mortality." *Ann. Review of Pub. Hlth.* 6:21-40, 1985.

[4] Johnson, K., Rosenbaum, S., Simons, J. *The Data Book: The Nation, States and Cities.* Washington, D.C.: The Children's Defense Fund, 1985.

[5] National Center for Health Statistics. "Annual summary of births, marriages, divorces and deaths: United States, 1986 (Provisional Data)." *Monthly Vital Statistics Report* 35(13): August 24, 1987.

[6] "Neonatal mortality—United States, Canada, and Western Europe." *Statistical Bulletin*, 2-6, Jan. 1972.

[7] National Center for Health Statistics. "Advance report of final mortality statistics, 1985." *Monthly Vital Statistics Report* 36(5) Supplement: August 28, 1987.

[8] Special Section. "National Surveillance of Infant Mortality." *Public Health Reports* 102(2):126-223, March-April 1987.

[9] Hogue, C.J.R., Buehler, J.W., Strauss, L.T., Smith, J.C. "Overview of the National Infant Mortality Surveillance (NIMS) project—design, methods, results." *Public Health Reports* 102(2):126-138, March-April 1987.

[10] Binkin, N.J., Williams, R.L., Hogue, C.J.R., Chen, P.M. "Reducing black neonatal mortality: Will improvement in birth weight be enough?" *JAMA* 253(3):372-375, 1985.

[11] David, R.J., Siegel, E. "Decline in neonatal mortality, 1968 to 1977: Better babies or better care?" *Pediatrics* 71(4): 531-540, 1983.

[12] Lee, K.-S., Paneth, N., Gartner, L.M., Pearlman, M.A., Gruss, L. "Neonatal mortality: An analysis of the recent improvement in the United States. *A.J.P.H.* 70(1):15-21, 1980.

Commentary

A Test of Compassion

If infant mortality is a barometer of a nation's conscience, then the United States does not measure well. Between 1950 and 1985 the U.S. infant mortality rate fell from 6th place among 20 industrialized nations with comparable reporting systems to a tie for last place. In 1985 the overall U.S. infant mortality rate was ranked 19th in the world behind such countries as Spain and Singapore. Even when only white infant deaths are considered, the U.S. is ranked 14th worldwide. The black infant mortality rate places us 28th, behind Cuba and Bulgaria and tied with Costa Rica. In 1985 America lost nearly two white babies and more than three black babies for every infant Japan lost.

Underlying this situation is a national health care system that consumes nearly 11 percent of the gross national product while excluding 35 million persons from coverage, two-thirds of whom are children and women of childbearing age. In 1985, three in 10 women, and one in every two black and nonwhite women, did not receive even minimally adequate prenatal care.

The consequences of such neglect are severe. Although 75 percent of all maternal mortality is preventable, black maternal mortality increased by more than 10 percent between 1983 and 1985. Further, in 1985 black neonatal mortality rose 3 percent nationally for the first time in over 20 years; prematurity and low birthweight also increased nationally. After four years of slowdown, the declining U.S. infant mortality rates virtually halted in 1985. Thus, it seems clear our nation will meet few, if any, of the modest 1990 maternal and infant health objectives the U.S. Surgeon General set forth in 1978.

Public health programs for the poor and uninsured fall woefully short of the need. The Supplemental Food Program for Women, Infants and Children (WIC) provided essential nutritional and health services to only 40 percent of all eligibles in 1987. Medicaid, the nation's only public program for low-income uninsured families, served less than 50 percent of all poor pregnant women and children in 1987. The United States is the only industrialized nation other than South Africa that does not ensure basic health care for all women and children.

While the nation's infant mortality rates remain unacceptable, the picture may not be as grim as in the past. America's children and families gained increasing assistance during the first session of the 100th Congress and prospects are good for further improvements during the second session. We must continue to increase federal health care efforts for moral as well as economic reasons. Comprehensive prenatal care not only reduces incidence of prematurity and low birthweight but saves our society $100 for every hour that such care postpones a premature birth. In addition, every dollar spent to provide prenatal care saves more than $3 in the first year of an infant's life by reducing the need for expensive hospital stays.

Saving our babies' lives is a test of our compassion as a nation. We need to accelerate action and attention to the plight of our nation's children. □

Sara Rosenbaum
Director, Health Division
Children's Defense Fund

Older Americans' Health

The United States is increasingly challenged by the rising number of elderly and their medical care needs. To date, the country lacks the necessary systematic programs to deal with this present and projected worsening problem. More and more, the private sector is being asked to respond.

In the past few years, Metropolitan Life Insurance Company demographers have published articles in the *Statistical Bulletin* detailing demographic characteristics of persons 65 and over, and presented projections of their impending explosive increase.[1] In this analysis, we will call attention to another aspect pertaining to our senior citizens—their health—and more specifically how they assess their own well-being. The article draws heavily on a report prepared by the National Center for Health Statistics in which data from various information systems were brought together in an attempt to address the need for health statistics on older Americans.[2]

Self Health Assessment

It is encouraging to observe that more than one-third of the population aged 65 or over, residing in their communities, reported that their health was excellent or very good.

> More than one-third of the population aged 65 or over (residing in their communities) reported that their health was excellent or very good.

Moreover, the proportion did not change with advance in age—from ages 65-74 through ages 85 and over. These findings (shown in Table 1) were determined from the National Health Interview Survey (NHIS) conducted in 1983-84. The survey is national in scope and is based on household interviews of the noninstitutional population. Thus, by definition, the study excludes persons in hospitals or nursing homes—the segment of the population in poorest health—and as a result underestimates the true health status of older persons. Another cautionary note is in order. Since the prevalence of chronic conditions increases with age—thus placing a larger proportion of persons aged 85 and over in long-term institutionalized settings (22 percent in 1985)[3]—comparisons with younger groupings must be tempered.

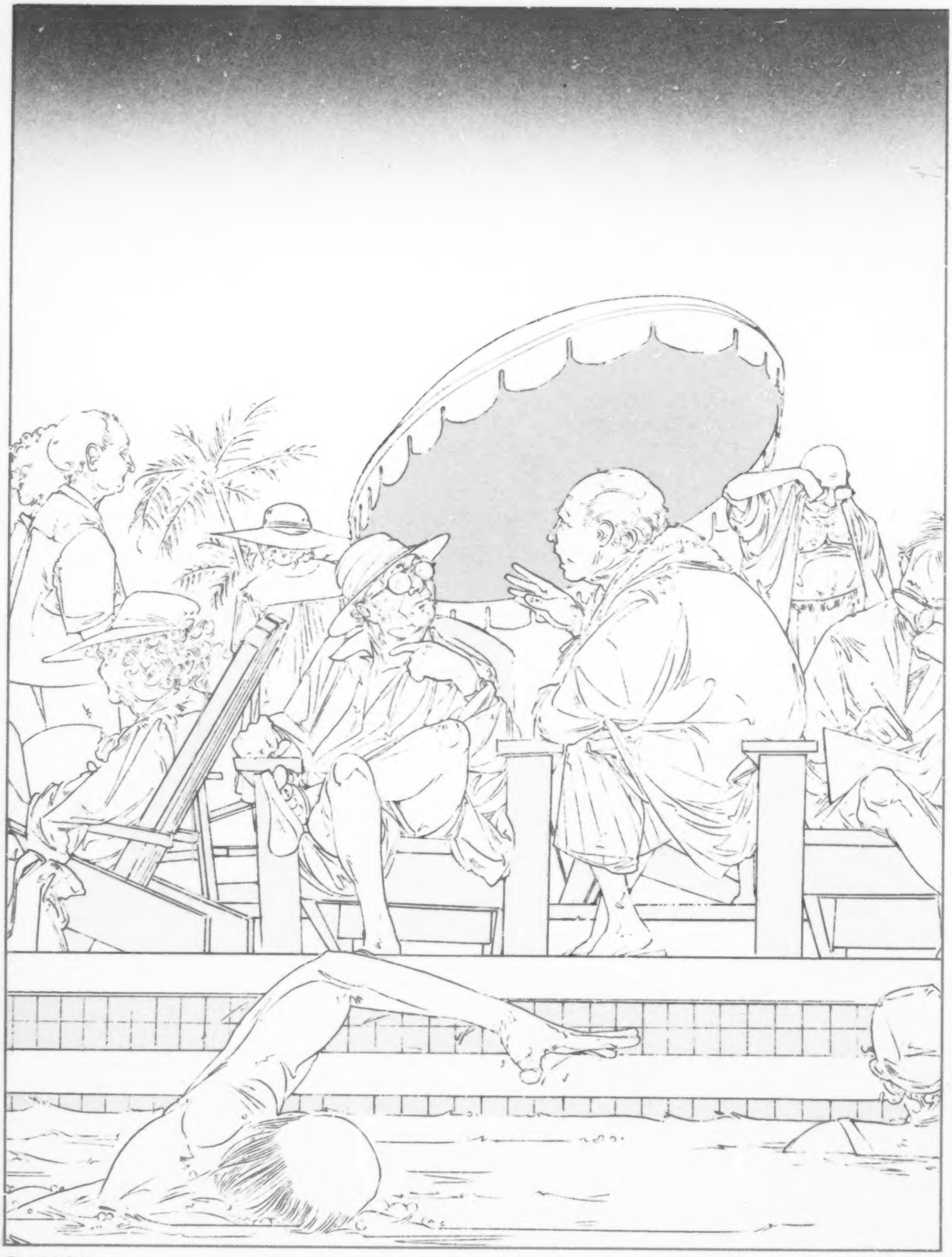
Racial Differences

Although a sizable percentage of all our elders assess their health to be excellent or very good, substantial disparities arise when race is taken into consideration. For example, over one-third of white men and women replied that their physical well-being was at least very good, whereas the proportion of black men and women who felt this way was only one-fourth. Moreover, around half of all blacks residing in a noninstitutionalized setting said their health was only fair or even poor—the corresponding percentage for whites was less than one-third.

> Although a sizable percentage of elders assess their health as excellent, substantial disparities arise when race is taken into consideration.

Activity Limitation Analysis

Not surprisingly, the comparatively unfavorable self health assessment of black older Americans is reflected in their reported degree of activity limitation. A visual representation of the sex and race differences in the degree of self-reported activity limitation is shown in the accompanying



David Johnson

figure. An analysis of the data by age group reveals that at ages 65-84 roughly one-half of black men and women said they experienced no limitation in their activities. By contrast, over three-fifths of all whites reported the same status. On the other end of the activity spectrum, 15 percent of white men aged 65-74 and only 7 percent of those aged 75-84, as well as white women aged 65-84, stated they were unable to carry on major activities. The proportion of black men in this category was about 50 percent larger than the reported value of white men. Among black women the percentage was three-fourths higher at ages 65-74 and was nearly double at ages 75-84.

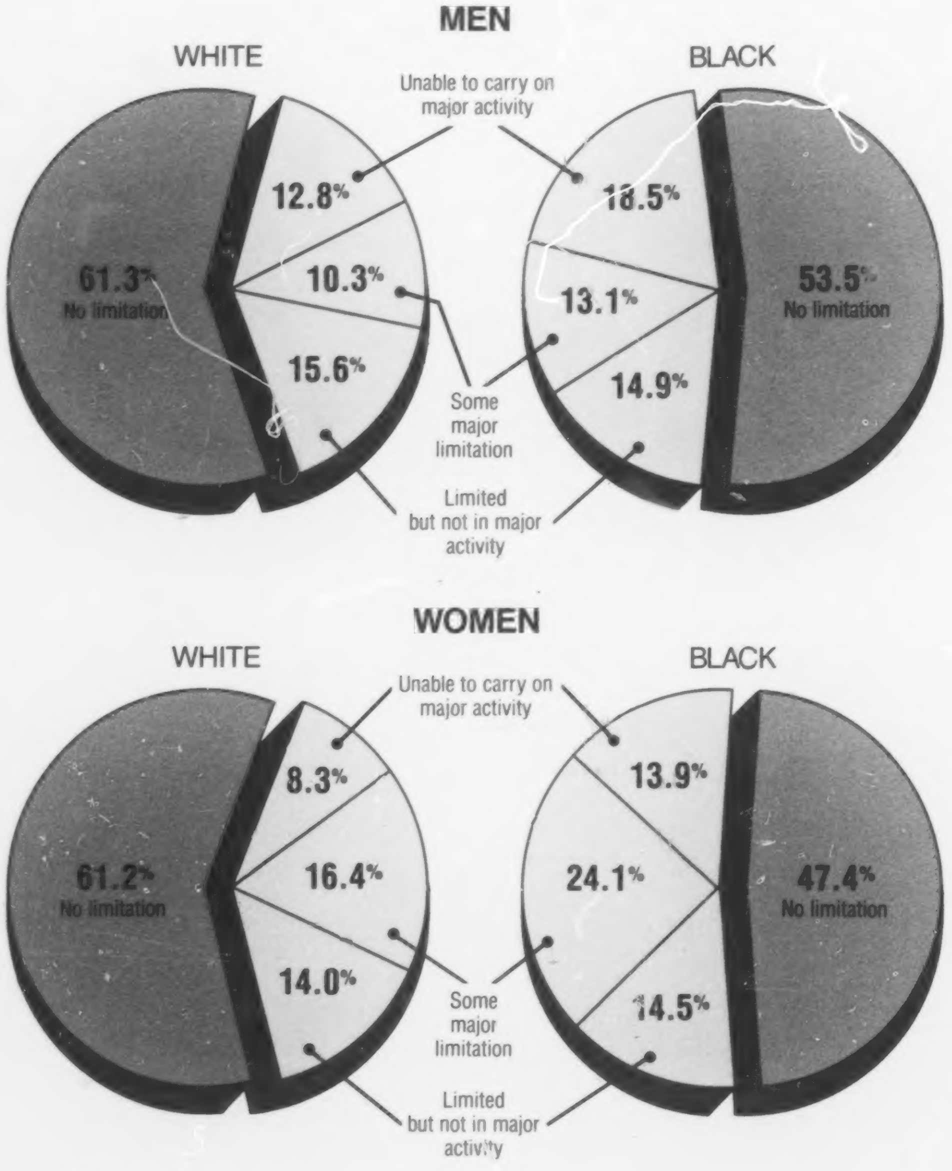
Table 1 — Respondent-assessed Health Status and Degree of Activity Limitation Due to Chronic Conditions Persons Aged 65 and Over, by Race, Sex and Age: United States, 1983–84

Percentage Distribution

Race, sex and age	Respondent-assessed* health status: Excellent or very good	Good	Fair or poor	Degree of activity limitation: No activity limitation	Limited but not in major activity	Limited in amount or kind of major activity	Unable to carry on major activity
Total†							
65 years and over	**35.9**	31.0	32.6	**60.4**	14.6	14.4	10.6
65 – 74 years	**36.2**	31.7	31.7	**62.7**	13.5	12.9	10.9
75 – 84 years	**35.2**	30.5	33.6	**60.5**	17.2	14.4	7.9
85 years and over	**35.5**	27.8	36.2	**40.4**	12.4	27.3	19.9
White Men							
65 years and over	**36.7**	30.6	32.3	**61.3**	15.6	10.3	12.8
65 – 74 years	**37.3**	30.5	31.8	**62.1**	13.2	9.7	15.0
75 – 84 years	**35.2**	31.4	32.7	**62.8**	20.5	9.7	7.0
85 years and over	**36.8**	28.3	34.8	**44.2**	18.5	20.7	16.7
Black Men							
65 years and over	**26.6**	25.1	47.7	**53.5**	14.9	13.1	18.5
65 – 74 years	**26.2**	26.0	47.4	**53.9**	12.6	11.3	22.4
75 – 84 years	**27.7**	23.1	48.1	**55.0**	19.6	15.0	10.0
85 years and over	**24.3‡**	24.3‡	48.6‡	**40.5‡**	16.2‡	27.0‡	18.9‡
White Women							
65 years and over	**36.8**	32.5	30.1	**61.2**	14.0	16.4	8.3
65 – 74 years	**37.2**	33.9	28.4	**64.8**	13.6	14.7	6.9
75 – 84 years	**36.5**	31.1	31.9	**60.4**	15.9	16.1	7.6
85 years and over	**36.3**	27.8	35.2	**39.4**	9.7	29.9	21.0
Black Women							
65 years and over	**24.1**	21.2	53.0	**47.4**	14.5	24.1	13.9
65 – 74 years	**23.8**	20.6	54.5	**49.7**	16.3	22.0	12.0
75 – 84 years	**25.4**	21.6	50.8	**47.2**	11.8	26.1	14.8
85 years and over	**21.8‡**	25.5	50.0	**31.8**	10.0‡	32.7	24.5

*Excludes unknown respondent-assessed health status.
† Includes races other than white and black.
‡ The numerator of [illegible] estimate has a relative standard error of more than 30 percent.
Source: Division of Health Interview Statistics, National Center for Health Statistics. Data from the National Health Interview Survey.

Degree of Activity Limitation Among Persons 65 and Over United States, 1983–84



Source: Table 1.

Table 2—Reported Impairments for Persons 65 Years of Age and Over by Type of Impairment, Race, Sex and Age United States, 1982–84

(per 1,000)

	SELECTED IMPAIRMENT				ACUTE IMPAIRMENT			
Race, sex and age	Visual impairment	Cataract	Hearing impairment	Deformity or orthopedic impairment	Respiratory	Digestive	Injuries	Other
All Persons								
65 years and over	98.0	149.3	308.7	167.6	38.7	6.2	21.0	31.4
65 – 74 years	73.2	94.4	260.7	165.2	42.4	5.8	18.1	32.9
75 – 84 years	119.7	217.8	361.3	162.1	32.6	6.3	22.3	28.5
85 years and over	218.6	327.4	495.7	211.1	32.7	8.9*	40.5	30.6
White Men								
65 years and over	105.6	105.0	368.1	143.5	37.6	4.7	15.8	23.2
65 – 74 years	83.8	64.2	329.4	145.9	40.6	5.2	14.3	23.9
75 – 84 years	127.8	163.8	429.7	132.9	32.7	3.2*	16.1	20.0
85 years and over	246.8	283.4	508.2	168.2	27.4*	7.3*	31.1*	30.2*
Black Men								
65 years and over	147.9	79.8*	261.7	171.4	16.8*	10.1*	6.9*	44.2
White Women								
65 years and over	88.6	185.6	275.6	179.7	40.5	7.5	26.4	36.1
65 – 74 years	61.7	121.0	219.8	175.4	45.5	6.8	22.3	38.2
75 – 84 years	108.7	258.6	320.4	176.1	31.7	7.8	27.8	33.3
85 years and over	198.3	355.4	492.7	224.0	39.5	10.8*	48.8	31.8
Black Women								
65 years and over	112.9	136.1	261.4	208.0	41.1	1.6*	16.4*	33.2

	CHRONIC CONDITION						
Race, sex and age	Ischemic heart disease	Hypertension	Cerebro-vascular disease	Emphysema	Chronic bronchitis	Diabetes	Arthritis
All Persons							
65 years and over	135.5	394.3	58.0	40.5	57.8	90.5	485.6
65 – 74 years	137.1	393.6	41.8	43.2	62.9	93.6	475.7
75 – 84 years	135.4	398.1	80.9	40.8	51.1	86.5	497.7
85 years and over	122.2	392.8	99.7	16.6*	42.9*	80.9	519.8
White Men							
65 years and over	178.4	316.7	62.9	75.0	52.6	79.7	392.2
65 – 74 years	192.2	334.9	52.9	73.8	52.3	73.8	390.7
75 – 84 years	148.0	289.0	79.5	84.7	57.4	92.0	386.2
85 years and over	168.2	245.0	95.1*	40.2*	32.9*	85.9*	438.8
Black Men							
65 years and over	61.0*	370.9	108.0	41.1*	16.4*	120.9	468.3
White Women							
65 years and over	118.6	428.8	50.4	20.3	66.5	85.2	540.4
65 – 74 years	109.6	414.2	29.8	24.2	75.0	90.4	527.2
75 – 84 years	137.5	446.2	74.9	17.5*	54.6	79.6	560.0
85 years and over	1[illegible]3.2	464.4	99.6	3.4*	53.2*	70.4*	556.2
Black Women							
65 years and over	76.6	642.7	75.8	11.6*	36.3*	211.1	639.6

*The numerator of the estimate has a relative standard error of more than 30 percent.
Source: Division of Health Interview Statistics, National Center for Health Statistics.
Data from the National Health Interview Survey.

Common Impairments

The frequency of visual and hearing impairments among the elderly increases rapidly with increasing age. Visual impairment comprises blindness in one or both eyes as well as other problems with sight. As may be observed from Table 2, white males have comparatively more difficulty with vision and hearing than white women. On the other hand, the prevalence of cataracts was higher among women. Overall, the incidence rate of cataracts among white women aged 65 and over—185.6 per 1,000—was three-fourths higher than the rate for white men, but the disparity steadily diminished with increased age.

> Hearing problems among senior citizens were much more prevalent than vision difficulties.

Hearing problems were much more prevalent than vision difficulties. As a group, more than three out of 10 senior citizens said they had problems hearing. Moreover, this problem was present in half of those aged 85 and over. It is noteworthy that with regard to deformities and orthopedic impairments, the frequency increases sharply at ages 85 and over, especially in women.

> Respiratory infections were the most frequently reported acute conditions among the aged.

Respiratory infections were the most frequently reported acute conditions among the aged. In general, the incidence rates were slightly higher among white women than white men. At the extreme ages, injuries were reported more often than respiratory problems. The big jump in prevalence rates may be distorted because multiple injuries to the same person were included in the data. For the purpose of this study, the most common injuries were contusions, sprains and strains, and open wounds and lacerations.[4]

Chronic Difficulties

The reported incidence of many common longstanding illnesses did not exhibit significant variability by age. The lower tier of Table 2 presents the 1982-84 prevalence rates of selected chronic conditions. Nearly half of all persons aged 65 and over living in the community said they had arthritis. Among women, the incidence of this disability was about one-third higher than among men. This was true for both whites and blacks. Additionally, the level of arthritis in black men and women was much greater than in whites. The second most frequently reported condition was hypertension. This problem was almost as often reported as arthritis and also showed similar incidence patterns. Black women reported a hypertension rate of 643 per 1,000 compared with 429 per 1,000 for white women. At the same time, the prevalence rate among men was 371 per 1,000 for blacks and 317 per 1,000 for whites.

> Nearly half of all persons aged 65 and over (living in the community) said they had arthritis.

Not as frequently reported, but no less important, were problems associated with ischemic heart disease. In this condition, the prevalence rate was significantly higher in whites—especially among men. A related problem—cerebrovascular disease—was reported much less frequently. However, this condition increased with age, and among white women aged 85 and over was reported nearly as commonly as ischemic heart disease. Prevalence rates for three other conditions—emphysema, chronic bronchitis and diabetes—are also shown in the table. For diabetes, the reported incidence rates among white persons aged 65-74 were higher among women than among men, but the opposite was true for ages 75 and over. Black women reported a diabetes prevalence rate 150 percent higher than white women, while among men, the frequency was about 50 percent greater for blacks.

Future Concerns

As the population of the United States slowly grows older, it is becoming extremely important to ascertain the health status of the aged. This group is acknowledged to utilize a disproportionate share of the nation's health resources. Most medical attention and costs are expended during the last years of life; this implies that during the 20th century, resources have been shifted from children and young adults to the care of people well over the age of 65.[5] Studies of self-health perceptions are providing a useful way of gauging the magnitude of the impending national burden. These analyses give public health officials a means of determining the success of rehabilitation programs, and related questions about the quality of life.

Trend data show no dramatic gains in the health status of the aged.

It is known that Americans are living longer, but are the added years of life years of vigor and independence or years of frailty and [excessive] dependence?[6] Unfortunately, trend data show no dramatic gains in the health status of the aged. Instead, it appears that while life expectancy slowly moves up, Americans are rapidly increasing the number of years that they live with significant disabilities. While progress has been made in preventing and alleviating the discomfort of many chronic illnesses, more improvements will be forthcoming. However, our health care system could gradually be inundated by the volume of the aged requiring services for nonfatal conditions. Now appears to be the time for the private sector to join in national efforts to formulate long-term health care management policy, to provide additional resources, and to give it the high priority it requires. □

The aged utilize a disproportionate share of the nation's health resources.

References

[1] *Statistical Bulletin*. Jan-Mar and Apr-Jun 1984, Apr-Jun 1986 and Jan-Mar 1987.

[2] National Center for Health Statistics. "Health statistics on older persons, United States, 1986." Series 3, No. 25, DHHS Pub. No. (PHS) 87-1409, June 1987.

[3] ibid p. 73.

[4] National Center for Health Statistics. "Types of injuries and impairments due to injuries, U.S." Series 10, No. 159, DHHS Pub. No. (PHS) 87-1587, November 1986.

[5] Brody, Jacob A., Brock, Dwight B., Williams, T. Franklin. "Trends in the health of the elderly population." *Annual Review of Public Health*, 8:211-34, 1987.

[6] Branch, Laurence G. & Meyers, Allan R. "Assessing physical function in the elderly." *Clinics in Geriatric Medicine* 3(1):29-51, February 1987.

Commentary

The Challenges of an Aging Population

American society must now begin to face the important consequences of longevity increases in the elderly population. As the article "Older Americans' Health" indicates, one can expect several things to happen in the future: medical advances in technology will enhance this trend; longer life will likely mean increased years of chronic illness and impairment; and concomitant with the increased number of aged, especially the "old-old," the prevalence of disability will increase.

The increase in the "old-old" segment of the elderly population will lead to formidable problems because of the greater functional dependency experienced by this group. The challenge posed is not one of cure but maintenance of functional independence and prevention of further dependence, both physical and economic. As elderly persons' capacity diminishes in independent management of their homemaking tasks and personal care needs, they must turn to family. Where family is unable, unavailable or unwilling to provide for all needs, the aged person must receive services from formal providers.

Provision of Services and Costs

The provision of these services, either at home or elsewhere, is expensive and can represent one of the greatest financial obligations in an individual's lifetime. The elderly are usually unprepared for the magnitude of these expenses. Personal impoverishment and assignment to public assistance (Medicaid) is all too often the unfortunate result. Some elderly, anticipating these huge outlays, attempt to avoid their responsibilities and transfer their assets to relatives. This has resulted in an inappropriate burden on the Medicaid program.

Our society must rethink how long-term care services for the aged can be humanely provided and equitably financed. Ideally, there should be a partnership among those affected: the individual, business and industry, family and government. However, before any new beginnings can be initiated, some critical questions must be addressed:

- Who is responsible for financing long-term care services; how will the costs be allocated and what payment methods will be used? Should insurance protection be mandatory or voluntary?
- How can functional independence be maintained in the most cost-effective manner?
- What is the best delivery system for providing high quality cost-efficient care?

Long-Term Care Is Predictable

Individuals must recognize that long-term care is becoming a predictable life event for an increasingly large part of the population. As a result, it can be planned for in much the same way as people plan for retirement, disability and accidental death; namely, through savings, family assistance and private insurance. Therefore, a primary question, given the rising costs of long-term care, is how to encourage individual action necessary for funding these needs.

The answer will depend on the American public's willingness to accept the personal, financial planning challenge inherent in these problems and thereby ensure a higher quality of life for its elderly citizens. □

James B. Weil
Vice-President, Senior Services
Metropolitan Life

Capsule Briefs

are timely literature selections
with broad reader interest

Maternal Diabetes: A Major Risk Factor for Newborn's Health

Approximately 15,000 infants are born in the U.S. yearly to women with diabetes that existed before their pregnancy. In 1986-87 infants born to the general population of diabetic women were at greatly increased risk for a number of medical problems, including: large size for gestational age (2.5 times); low blood sugar (over 20 times greater); immature lungs (over 6 times greater); and congenital anomalies (over 5 times greater). There are clearly stated public health program objectives for prevention of adverse outcomes in pregnancies complicated by diabetes. (Willhoite, B., *et al*, **Morbidity and Mortality Weekly Report** 36(45):741-744, November 20, 1987) □

Biomedical Ethics: A New Frontier in Quality of Medical Care

Has your community hospital formed an Ethics Committee? Does your doctor know what an "ethics consultation" may be all about? If questions like that puzzle your medical care providers, perhaps you could refer them to this excellent issue which describes workable approaches to these questions' answers. (Recently we heard of an infant born with a rare genetic disorder that is invariably fatal in about four months. The infant currently receives very expensive hospital intensive care. The parents are depressed, distraught. What to do?—Ed.) (Summers, J.W. [Ed.] "Clinical Ethics," **Healthcare Executive** 2(4):22-57, entire issue, July-August 1987.) □

Native American Infant Deaths: Partial Public Health Success

The infant mortality of American Indian and Alaskan native infants decreased 55 percent from 24.6 per 1,000 live births in 1970 to 11.0 per 1,000 in 1981-83. Most of these gains have occurred during the first 28 days of life, the neonatal period, where their rate (5.5 per 1,000) was actually lower than the U.S. white rate (7.7 per 1,000). (This is generally an unheralded public health success story—Ed.) However, the postneonatal (28 days to 12 months) mortality rate remained higher in the Native American infants than in the U.S. white population (6.1 vs. 3.6 per 1,000). (Honigfeld, L.S. and Kaplan, D.W., **Pediatrics** 80(4):575-578, October 1987.) □

Hospitalization of AIDS Cases: Going for Broke

In the midst of the hysteria over AIDS some objective voices are being heard. In this sobering analysis the authors, all associated with New York University's Medical Center, systematically reviewed the available literature to project future costs for the hospitalization of AIDS cases through 1991. By 1991 this disease may reach (CDC upper estimate) 208,800 cases in the U.S., representing 3 percent of total hospital costs, using 2 percent of available hospital beds. In addition, the authors discuss the possible impact of alternative care facilities. (Green, J., *et al*, **Health Affairs** 6(3):19-31, Fall 1987.) □

Hip, Hip, Hooray?

Total hip replacement surgery has become so common that an estimated 80,000 are performed yearly in the U.S. at an annual expense of over $1.6 billion; each surgery's total costs (hospital and physician) are about $20,000. From this northern California study of 1,324 Medicare claims for total hip replacements in 1980, the 12-month post-surgery mortality rate was very high, 166 or 12.5 percent. Another 39 or 2.9 percent had dislocations requiring rehospitalization. Unless recent experience has improved, perhaps the initial enthusiasm for this procedure should be tempered. (Fowles, J., *et al*, **Business and Health** 4(7):44-46, June 1987.) □

Cholesterol, Colon Cancer, and Continued Controversy

Do low levels of serum cholesterol actually represent a risk factor for colon cancer? The literature on this subject has another impressive study added to the side that seems to favor a risk for those with lower levels of serum cholesterol (viz. under 132 mg/deciliter). Even when the interval between measurement and death was considered, the risk persisted (actually increased). What to recommend as a public health measure? (The answer is still unclear, because no underlying biological mechanism has been established—Ed.) (Schatzkin, A., *et al*, **Lancet** 2:298-301, August 8, 1987.) □

Papillomavirus:
A New Culprit in the Cause of Cervix Cancer

In this French study of women with cervix cancer, analyses were also made of wart-like lesions on the penises of their sexual partners. It was neatly demonstrated that men with such lesions, from which certain types of papillomaviruses were cultured, were significantly more likely to have a female sex partner with cervix cancer or a precursor. (The epidemiology of cervix cancer for many years has suggested a transmissible causal agent; this study provides considerable biological support for that hypothesis—Ed.) (Barrasso, R., *et al*, **The New England Journal of Medicine** 317(15):916-923, October 8, 1987.) □

Costs of an Appendectomy: Regional Variations

Each year approximately one person in every 15 develops appendicitis. For just over 100 years, the surgical removal of the appendix, appendectomy, has remained the most reliable method to determine whether or not disease was present.[1-3] While the incidence of the acute condition has been decreasing since the 1930s, appendectomies are one of the most common surgical conditions of the abdomen, and account for about one percent of all operations.[2-4] In 1986, 275,000 appendectomies were performed in short stay hospitals in the United States.[5] The disease rarely is fatal—less than one in 100,000 persons die from it annually—and frequently it is performed as an incidental procedure at the time of another major or exploratory procedure.[1,2,4]

About one person in every 15 develops appendicitis each year.

Appendicitis affects the sexes in equal proportions except between the ages of 15 and 25 when the male to female ratio is close to 2:1.[2-4] Although rare in infants, it occurs in persons of all ages but is more frequently encountered among 10- to 30-year-olds, with a peak incidence occurring during the mid-teens.[2-4] After age 50, appendicitis risk drops markedly. Because diagnosis of this disease is especially difficult among infants and children and the elderly, rupture of the appendix is more frequent, the course of the disease is more virulent, and complications are more common among these patients than among adolescents and/or young adults.[6] Prompt and early diagnosis remains the key to reduction of complications and death from appendicitis.

Appendicitis occurs more frequently among 10- to 30-year-olds with peak incidence in the mid-teen years.

Acute appendicitis occurs at varying rates around the world. It is relatively unknown in Asia and in parts of Africa, and some speculate that this low incidence is associated with the consumption of high fiber diets by these people.[1] Geographic differences in the distribution of this disease also exist within the United States; in 1986 the rates were almost identical in the West and Midwest, but there was a 43 percent difference between the rates in the West and those in the Northeast (Table 1).

Metropolitan Study

The following analysis explores the geographic variation in the costs for this surgical procedure. It presents data on close to 3,200 appendectomies performed on persons 65 years old and younger in U.S. hospitals during 1986. The data are from 3,191 claims made by employees and dependents of companies insured under group health contracts by Metropolitan Life Insurance Company. The average charges represent billed amounts for hospital and physician (surgical and medical) fees for CPT-4* codes 44900, 44950, 44955 and 44960.

---

*CPT-4 = *Physician's Current Procedural Terminology: Fourth Edition.*

The study group included 1,569 women and 1,622 men with mean ages of 25.5 and 22.5 years, respectively. The charges registered for women were slightly higher than those for men, but the differences were consistent across all states, regions and charge categories, and thus the two data sets were combined for purposes of analysis. Presentation of claims charges was restricted to those states in which at least 40 appendectomies were performed; these states represent 88 percent of the reported cases.

Diagnosis of appendicitis is especially difficult among the elderly and the very young.

As seen in Table 2, the distribution of appendectomy cases varied considerably by region of the country. The East North Central area accounted for 21 percent of the appendectomies, followed by West South

Table 1 — Appendectomies by Region and Age United States, 1986*

	Total		Northeast		Midwest		South		West	
	Number	Rate†	Number	Rate†	Number	Rate†	Number	Rate†	Number	Rate†
Under 15	58,600	112.7	9,475	97.1	17,006	131.6	18,130	99.1	13,989	127.0
15 – 19	47,850	259.3	8,165	211.6	13,522	292.0	14,249	221.5	11,914	337.2
20 – 24	40,539	204.7	7,097	170.6	12,210	246.2	11,325	166.0	9,907	256.6
25 – 34	50,605	120.1	8,262	98.6	14,629	141.0	14,728	103.4	12,986	142.0
35 – 44	34,788	106.1	5,404	78.3	9,387	119.8	12,583	113.4	7,414	106.6
45 – 54	15,982	70.2	2,731	55.0	4,015	72.2	5,392	68.9	3,844	87.0
55 – 64	12,041	54.2	3,138	60.5	2,977	54.3	3,563	47.7	2,363	57.9
65 and over	14,787	50.7	2,297	34.3	5,137	69.5	5,310	53.7	2,043	39.4
Total	275,192	115.0	46,569	93.3	78,883	133.3	85,280	103.9	64,460	133.8

*Categories in which fewer than 5,000 estimated procedures were performed should be viewed with caution and should be considered unreliable if used alone.

† Rate per 100,000 population.

Source: National Center for Health Statistics, unpublished estimates from National Hospital Discharge Survey. Population, unpublished data from the Bureau of the Census.

Table 2—Geographic Variation in Average Charges for a Typical* Appendectomy,† 1986

Geographic Area	Percent Distribution of Cases	Average Costs ($)				
		Total Hospital & Physician	Hospital Charge			Physician Charge
			Total	Room & Board	Ancillary	
Total U.S.	100.0	5,090	3,680	1,060	2,620	1,410
New England	4.9	4,890	3,600	1,190	2,410	1,290
Connecticut	1.5	5,090	3,640	1,150	2,490	1,450
Massachusetts	1.3	4,940	3,600	1,090	2,510	1,340
Middle Atlantic	7.5	5,190	3,550	1,260	2,290	1,640
New Jersey	1.9	4,750	3,020	1,240	1,780	1,730
New York	2.9	4,870	3,100	1,230	1,870	1,770
Pennsylvania	2.7	5,840	4,410	1,300	3,110	1,430
East North Central	20.7	4,710	3,420	1,090	2,330	1,300
Illinois	5.7	5,600	4,050	1,290	2,760	1,550
Indiana	3.0	3,670	2,530	840	1,690	1,140
Michigan	1.5	4,180	3,230	1,030	2,200	950
Ohio	7.4	4,850	3,530	1.090	2,440	1,320
Wisconsin	3.0	4,020	2,910	990	1,920	1,110
West North Central	7.7	4,210	3,120	900	2,220	1,090
Iowa	1.7	4,430	3,280	1,050	2,230	1,150
Minnesota	1.6	3,570	2,660	790	1,870	910
Missouri	2.7	4,330	3,180	840	2,340	1,150
South Atlantic	16.4	4,750	3,430	930	2,500	1,320
Florida	4.5	6,010	4,300	1,100	3,200	1,710
Georgia	3.2	5,300	3,870	890	2,980	1,430
Maryland	1.6	3,830	2,460	1,080	1,380	1,370
North Carolina	3.5	3,630	2,650	700	1,950	980
Virginia	1.4	4,040	3,080	890	2,190	960
East South Central	7.7	4,410	3,330	820	2,510	1,080
Alabama	1.6	4,740	3,650	790	2,860	1,090
Kentucky	2.4	4,270	3,120	1,050	2,070	1,150
Mississippi	1.3	3,780	2,720	480	2,240	1,060
Tennessee	2.3	4,660	3,660	780	2,880	1,000
West South Central	18.5	5,240	3,700	880	2,820	1,540
Louisiana	3.1	5,740	4,170	930	3,240	1,570
Oklahoma	1.7	4,620	3,370	770	2,600	1,250
Texas	12.5	5,320	3,700	910	2,790	1,620
Mountain	5.2	4,980	3,660	980	2,680	1,320
Colorado	2.1	4,710	3,420	980	2,440	1,290
Pacific	11.4	7,170	5,220	1,560	3,660	1,950
California	10.0	7,480	5,430	1,620	3,810	2,050

*Typical surgeries exclude outliers according to DRG guidelines.

† Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.

Source: Claims data from Metropolitan Life Insurance Company merged and edited by Corporate Health Strategies, Inc.; analysis and computations by Health and Safety Education personnel, Metropolitan Life Insurance Company.

Average Length of Stay	Percentage	
	Hospital of Total	Ancillary of Hospital
5.04	72	71
5.31	74	67
4.91	72	68
5.38	73	70
5.60	68	65
6.18	64	59
5.58	64	60
5.21	76	71
5.20	73	68
5.36	72	68
4.60	69	67
4.23	77	68
5.30	73	69
5.72	72	66
4.53	74	71
5.15	74	68
4.10	75	70
4.18	73	74
4.99	72	73
4.91	72	74
5.38	73	77
4.74	64	56
4.46	73	74
5.77	76	71
4.89	76	75
4.98	77	78
4.91	73	66
4.45	72	82
5.05	79	79
5.15	71	76
5.59	73	78
4.55	73	77
5.17	70	75
4.41	73	73
4.25	73	71
4.93	73	70
4.98	73	70

Central with 19 percent. The New England and the Mountain areas reported 152 and 164 cases, respectively, representing 5 percent, each, of the cases. Texas and California each had more than 300 appendectomies and Ohio had the third highest number of cases. The age distribution of the patients was in accord with national data and shows the usual preponderance of this surgery among adolescents and young men (Figure). The number of appendectomies was 26 percent higher among males 10 to 19 than females of this age. The modal age for the surgery was 15 for women and 17 for men.

Geographic Variation in Costs of an Appendectomy

According to the Metropolitan data, the average total cost for an appendectomy was $5,090 (Table 2). Three regions of the country reported average total charges in excess of this national average. The Pacific region reported the highest charges, 41 percent above the norm. The increase was much less pronounced in West South Central and Middle Atlantic regions where the costs were three and two percent above the average, respectively. The lowest average regional cost was that in the West North Central area where the charges were 17 percent below the national total and 41 percent below that in the Pacific states. The charges in the East South Central region were second lowest and 13 percent below the U.S. average.

Average cost for an appendectomy in the U.S. in 1986 was $5,090.

State Variation in Costs

Appendectomy charges differed by as much as 110 percent between individual states.

In 1986 appendectomy charges varied by as much as 110 percent between states.

California reported charges more than double those in Minnesota and almost 50 percent higher than the average for the country. Only six other states, Florida, Pennsylvania, Louisiana, Illinois, Texas and Georgia, reported charges above the average, ranging from 18 to 4 percent higher. Seven states, Minnesota, North Carolina, Indiana, Mississippi, Maryland, Wisconsin and Virginia, registered total charges 20 to 30 percent below the U.S. norm. Appendectomy charges in Illinois were 53 percent higher than those in the neighboring state of Indiana, which partially reflects the fact that 60 percent of the Illinois claims were from the high medical care cost areas of Chicago and its surrounding suburbs.

Physician Charges

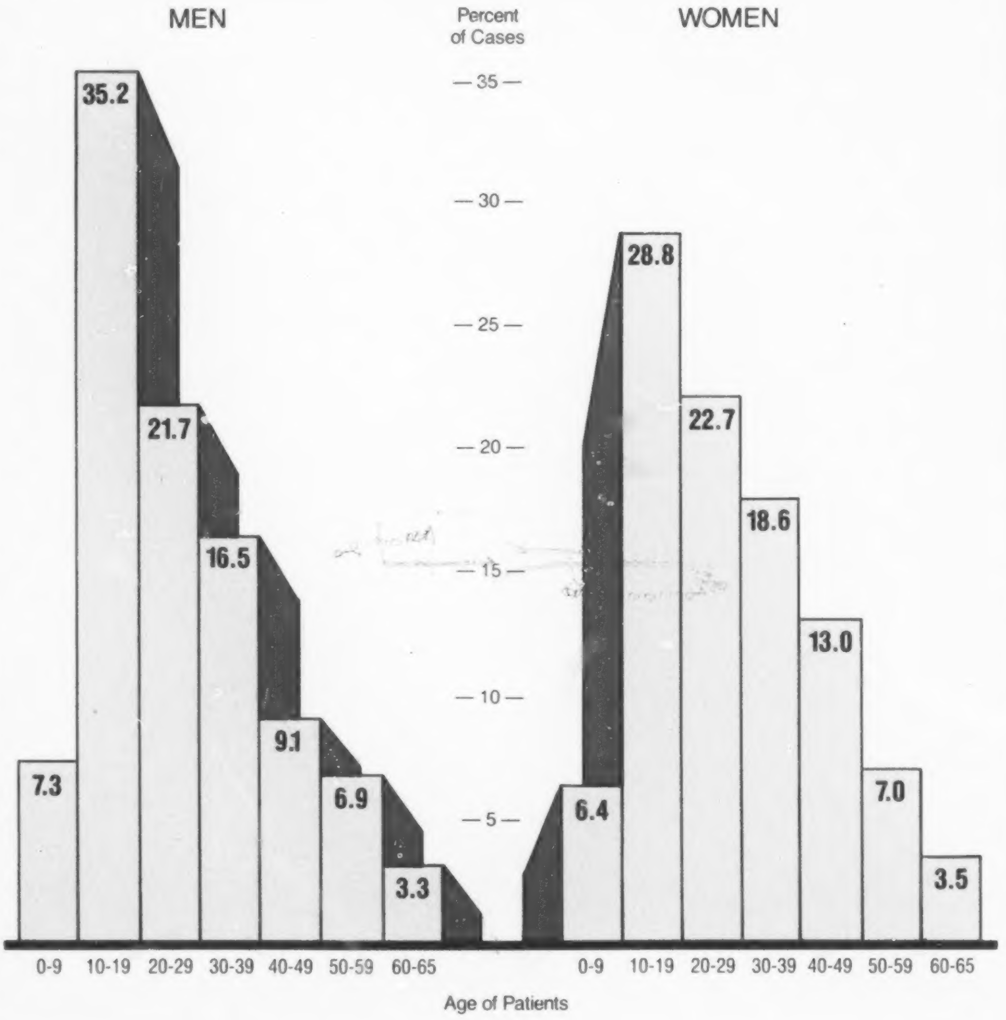
Physician charges represented 28 percent of the total costs for an appendectomy. Average physician cost was $1,410, with some variation by region. In the Middle Atlantic area, these charges accounted for almost one-third of the total bill and in the East South Central they represented slightly less than one-quarter. Inter-state variations in physician charges were a bit more pronounced. Three states, New Jersey, New York and Maryland, reported doctor charges that were 36 percent of the total bill. Tennessee, on the other hand, registered physician charges amounting to 21 percent of the bill and in Alabama and Michigan, these costs were 23 percent of the total. The charges were the highest in California ($2,050) and the lowest in Minnesota ($910) representing a 125 percent difference. New Jersey, New York and Florida reported physician charges of 21 percent or more above the average. In contrast to these charges are the low ones reported in Michigan, Minnesota, North Carolina and Virginia, all under $981 and averaging 33 percent below the national norm.

Hospital Charges

On the average, 72 percent of the total cost to health insurance for an appendectomy was attributed to hospital charges (i.e., room and board and ancillary fees). Actual hospital charges varied by as much as 122 percent between states. California led all with a charge of $5,430 and Maryland was the lowest at $2,460. The Maryland charge was 33 percent lower than the average and was followed closely by the hospital charges in Indiana (31 percent lower), North Carolina and Minnesota (each 28 percent lower) and Mississippi (26 percent below the average).

Hospital charges accounted for 72 percent of the total cost to health insurance for an appendectomy.

Appendectomy Cases* by Age and Sex, 1986



*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.
Source of data: Corporate Health Strategies, Inc.

Hospital charges in excess of 10 percent of the U.S. average were reported in California, Pennsylvania, Florida, Louisiana and Illinois.

Ancillary charges (laboratory, X-ray, operating room fees, etc.) comprised 71 percent of the hospital bill and more than half of the total charge for an appendectomy. By individual states, these charges typically ran two and one-half to almost five times the cost of room and board. The charges varied widely by state, comprising 82 percent of the hospital charges in Mississippi, yet only 56 percent in Maryland. The highest ancillary charges were found in California, Louisiana and Florida, 45, 24 and 22 percent above the average. The lowest charge was reported in Maryland, with ancillary charges 47 percent below the U.S. average. Other states where these charges were comparatively low, i.e., between 35 and 26 percent below the norm, were Indiana, New Jersey, New York, Minnesota, Wisconsin and North Carolina.

As evident from this study, regional variation in appendectomy charges were fairly extensive in each of the cost categories examined. Whether these differences are the result of the prevailing medico-legal, socioeconomic and/or demographic conditions of the area, the availability and training of the medical community and services, or some combination of the above, remain issues in need of further exploration. As long as medical technology and surgical techniques continue to improve, the safety of appendectomies will continue to be high. Such positive results, however, are fairly restricted to the early intervention in the disease. Thus, improved prognosis also depends on improved analytic skills of the physician and increased patient education so that medical attention is sought early enough for effective intervention. □

> Early diagnosis and prompt treatment remain the best means of preventing complications.

References

[1] Way, L.W. "Chapter 30: Appendix," pages 555-560 in *Current Surgical Diagnosis and Treatment*, Seventh Edition. Lawrence W. Way (ed.). Los Altos, California: Lange Medical Publications, 1985.

[2] Storer, E.H. "Chapter 29: Appendix," pages 1245-1256 in *Principles of Surgery*, Fourth Edition. Seymour I. Schwartz, G. Tom Shires, F.C. Spencer, Edward H. Storer (eds.). New York, New York: McGraw-Hill Book Company, 1984.

[3] "Acute appendicitis." *Mayo Clinic Health Letter*, 5-6: February, 1987.

[4] Condon, R.E. "Chapter X: Appendicitis," pages 967-979 in *Textbook of Surgery*, Thirteenth Edition. David C. Sabiston, Jr. (ed.). Philadelphia, Pa.: W.B. Saunders Company, 1986.

[5] National Center for Health Statistics. 1986 Summary: National Hospital Discharge Survey, Advance Data from Vital and Health Statistics. No. 145. DHHS Pub. No. (PHS) 87-1250. Hyattsville, Md. Public Health Service, 1987.

[6] "Chapter 8: Appendicitis," pages 778-780 in *The Merck Manual*, Robert Beckar and John H. Talbott (eds.). Rahway, N.J., Merck Sharp & Dohme Research Laboratories, 1977.

Population Slowdown in the United States

On January 1, 1987, there were 242,742,000 people (including armed forces overseas) in the United States, compared with 240,523,000 a year earlier. The increment of 2,219,000 inhabitants represents a gain of 0.9 percent during 1986 and is somewhat below the relative increase in 1985 and the average rise of 1.0 percent over the past decade. Hidden in the national data is the significant regional population shifts brought on by modified economic conditions—markedly altering the post-1980 trends.

> About 600,000 persons were added to the U.S. population by in-migration, or around 50,000 fewer than the 640,000 in 1985.

For the country as a whole, the reduced rate of population growth in 1986 was due to both the lower levels of natural increase and net in-migration. About 600,000 persons were added to the United States population by in-migration, or around 50,000 fewer than the 640,000 in 1985. Both these numbers are far less than the post World War I peak of 845,000 that occurred in 1980. In that year large numbers of Cubans and Haitians entered the country. Natural increase—the excess of births over deaths—amounted to 1,632,000 in 1986, or 42,000 less than the 1,674,000 in 1985.

In general, births in the United States have been rising since the early 1970s, reflecting the growing numbers of women in the childbearing ages. However, there were 30,000 fewer live births in 1986 than in the year before. Specifically, there were an estimated 3,730,000 live births in 1986 compared with 3,760,561 in 1985. The recent count of newborns represented the highest number in almost two decades. Nonetheless, the figure was well below the record number of 4.3 million live births that occurred in 1957. The most recent projections by the Bureau of the Census indicate that the level of births in the immediate future will not approach the four million mark and will shortly begin a gradual decline.* The crude birth rate was 15.5 per 1,000 population in 1986 and was 15.8 per 1,000 in 1985.

Mortality Picture

During 1986 a record number of deaths—about 2,100,000—occurred in the United States. This marks the fourth consecutive year in which the count of deaths increased, as well as the fourth year in a row in which they exceeded two million. Moreover, because of the continued aging of the population, projections indicate it is extremely unlikely that their total will fall below the two million mark in the foreseeable future.* The number of deaths in 1986 correspond to a record low crude death rate of 8.7 per 1,000—the same as in 1985. In the latter year the final count of deaths reached 2,086,440.

---

*U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 952.

Table 1 — Estimates of the Total Population Including Armed Forces Overseas, United States, 1970–1987

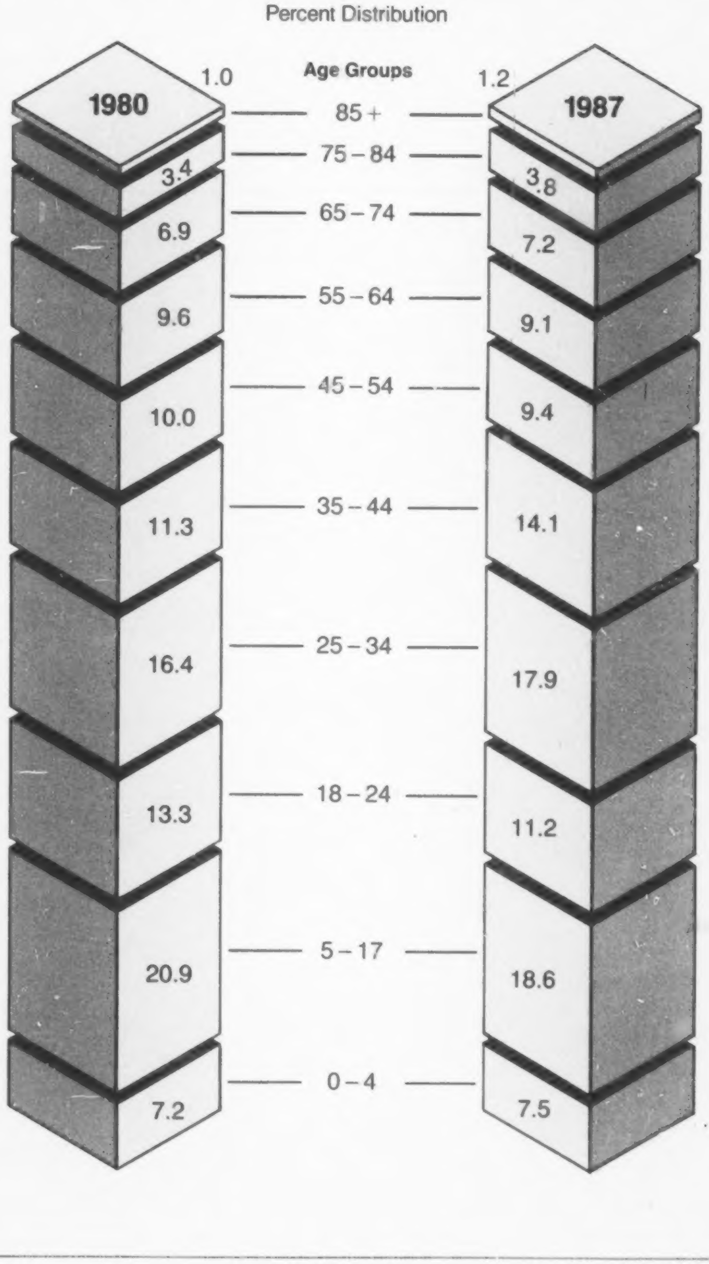
Age Group	April 1 1970	April 1 1980	July 1 1986	January 1 1987
	Population in Thousands			
All Ages	204,401	227,061	241,595	**242,742**
Under 5	17,167	16,348	18,128	**18,206**
5 – 17	52,542	47,408	45,143	**45,150**
18 – 24	24,469	30,289	27,973	**27,187**
25 – 34	25,153	37,259	42,984	**43,451**
35 – 44	23,220	25,698	33,143	**34,227**
45 – 54	23,261	22,806	22,822	**22,818**
55 – 64	18,609	21,703	22,230	**22,089**
65 – 74	12,447	15,581	17,325	**17,477**
75 – 84	6,124	7,729	9,051	**9,224**
85 and over	1,409	2,240	2,796	**2,913**
	Percent Distribution			
All Ages	100.0	100.0	100.0	**100.0**
Under 5	8.4	7.2	7.5	**7.5**
5 – 17	25.7	20.9	18.7	**18.6**
18 – 24	12.0	13.3	11.6	**11.2**
25 – 34	12.3	16.4	17.8	**17.9**
35 – 44	11.3	11.3	13.7	**14.1**
45 – 54	11.4	10.0	9.4	**9.4**
55 – 64	9.1	9.6	9.2	**9.1**
65 – 74	6.1	6.9	7.2	**7.2**
75 – 84	3.0	3.4	3.7	**3.8**
85 and over	.7	1.0	1.2	**1.2**

Source: Various reports of the Bureau of the Census and computations by the Health and Safety Education Division of the Metropolitan Life Insurance Company.

> Recent improvement in infant mortality has kept the toll of deaths among children from rising.

While the number of deaths is expected to continue climbing, the recent improvement in infant mortality, as shown in the article in this issue (pages 2-8), has kept the toll of deaths among children under one year of age from rising. For example, in 1986 provisional figures indicate that fewer than 39,000

Figure A — Total Population Including Armed Forces Overseas by Age, United States, April 1, 1980 and January 1, 1987



Source: Table 1.

Table 2—Population of the United States by Geographic Area, January 1, 1977–1987

Area	Numbers in Thousands				Annual Percent Increase*	
	1977	1980	1986	1987	During 1986	1977–87†
United States						
Including Armed Forces Overseas	219,179	226,451	240,523	242,742	0.9	1.0
Excluding Armed Forces Overseas	218,706	225,945	239,994	242,221	.9	1.0
New England	12,218	12,342	12,700	12,783	.7	.5
Maine	1,096	1,124	1,169	1,177	.7	.7
New Hampshire	858	917	1,013	1,038	2.5	1.9
Vermont	489	509	538	544	1.1	1.1
Massachusetts	5,742	5,739	5,828	5,846	.3	.2
Rhode Island	948	948	971	979	.8	.3
Connecticut	3,085	3,105	3,181	3,199	.6	.4
Middle Atlantic	37,119	36,815	37,238	37,351	.3	.1
New York	17,881	17,572	17,765	17,798	.2	‡
New Jersey	7,340	7,368	7,593	7,650	.8	.4
Pennsylvania	11,898	11,875	11,880	11,903	.2	‡
East North Central	41,304	41,682	41,708	41,813	.3	.1
Ohio	10,764	10,801	10,753	10,762	.1	‡
Indiana	5,409	5,496	5,504	5,510	.1	.2
Illinois	11,367	11,420	11,549	11,569	.2	.2
Michigan	9,152	9,266	9,120	9,180	.7	‡
Wisconsin	4,612	4,699	4,782	4,792	.2	.4
West North Central	16,939	17,173	17,571	17,597	.1	.4
Minnesota	3,978	4,068	4,205	4,226	.5	.6
Iowa	2,909	2,916	2,867	2,841	−.9	−.2
Missouri	4,852	4,916	5,052	5,081	.6	.5
North Dakota	648	653	682	677	−.7	.4
South Dakota	687	690	708	709	.1	.3
Nebraska	1,554	1,569	1,602	1,597	−.3	.3
Kansas	2,311	2,361	2,455	2,466	.4	.7
South Atlantic	35,048	36,791	40,581	41,225	1.6	1.6
Delaware	591	594	628	638	1.6	.8
Maryland	4,161	4,209	4,430	4,493	1.4	.8
District of Columbia	685	642	625	629	.6	−.8
Virginia	5,159	5,336	5,747	5,826	1.4	1.2
West Virginia	1,894	1,948	1,928	1,912	−.8	.1
North Carolina	5,648	5,864	6,300	6,366	1.0	1.2
South Carolina	2,969	3,112	3,357	3,397	1.2	1.4
Georgia	5,178	5,444	6,042	6,161	2.0	1.8
Florida	8,763	9,642	11,524	11,803	2.4	3.0
East South Central	14,141	14,641	15,175	15,253	.5	.8
Kentucky	3,552	3,656	3,730	3,732	.1	.5
Tennessee	4,386	4,582	4,787	4,822	.7	1.0
Alabama	3,758	3,886	4,038	4,066	.7	.8
Mississippi	2,445	2,517	2,620	2,633	.5	.7
West South Central	22,073	23,594	26,712	27,026	1.2	2.0
Arkansas	2,190	2,282	2,367	2,379	.5	.8
Louisiana	3,983	4,184	4,495	4,513	.4	1.3
Oklahoma	2,849	3,009	3,307	3,309	.1	1.5
Texas	13,051	14,119	16,543	16,825	1.7	2.6
Mountain	10,254	11,293	12,915	13,118	1.6	2.5
Montana	764	787	822	817	−.6	.7
Idaho	870	940	1,003	1,002	−.1	1.4
Wyoming	405	465	509	506	−.6	2.3
Colorado	2,665	2,877	3,252	3,284	1.0	2.1
New Mexico	1,203	1,297	1,466	1,488	1.5	2.1
Arizona	2,386	2,692	3,257	3,372	3.5	3.5
Utah	1,298	1,447	1,656	1,675	1.1	2.6
Nevada	663	788	950	974	2.5	3.9
Pacific	29,610	31,614	35,394	36,055	1.9	2.0
Washington	3,736	4,095	4,437	4,487	1.1	1.8
Oregon	2,413	2,619	2,693	2,705	.4	1.1
California	22,148	23,537	26,679	27,255	2.2	2.1
Alaska	402	402	528	540	2.3	3.0
Hawaii	911	961	1,057	1,068	1.0	1.6

* Based on rounded estimates. Minus sign (−) denotes decrease.

† Geometric average annual rate.

‡ Less than 0.05.

Note: Figures for divisions and states exclude population of the Armed Forces Overseas.

Source of basic data: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company from reports of the Census and National Center for Health Statistics.

newborns died in the first year of life compared with 40,030 in 1985. As a result of this encouraging trend, the infant mortality rate declined to 10.4 per 1,000 live births, or the lowest level ever recorded in the United States. During 1986 life expectancy at birth rose to 74.9 years for all newborns, 71.3 years for boys and 78.3 for girls.

Age Distribution

As the population of the United States continues to age, it is not surprising that with the passage of time the number of persons aged 65 and over has comprised a significantly larger proportion of the total.

> As the U.S. population continues to age, it is not surprising that, with the passage of time, the number of persons aged 65 and over has comprised a significantly larger proportion of the total.

In January 1987 elders accounted for 12.2 percent of all persons. As recently as April 1980, their relative number constituted 11.3 percent of the total, while in April 1970, the proportion was just 9.8 percent. On the other hand, the relative number of persons under age 18 continues to decline. At the beginning of last year, their number—63.4 million —amounted to 26.1 percent of the total population. Youngsters accounted for 28.1 percent of all persons at the time of the last census and 34.1 percent a decade earlier.

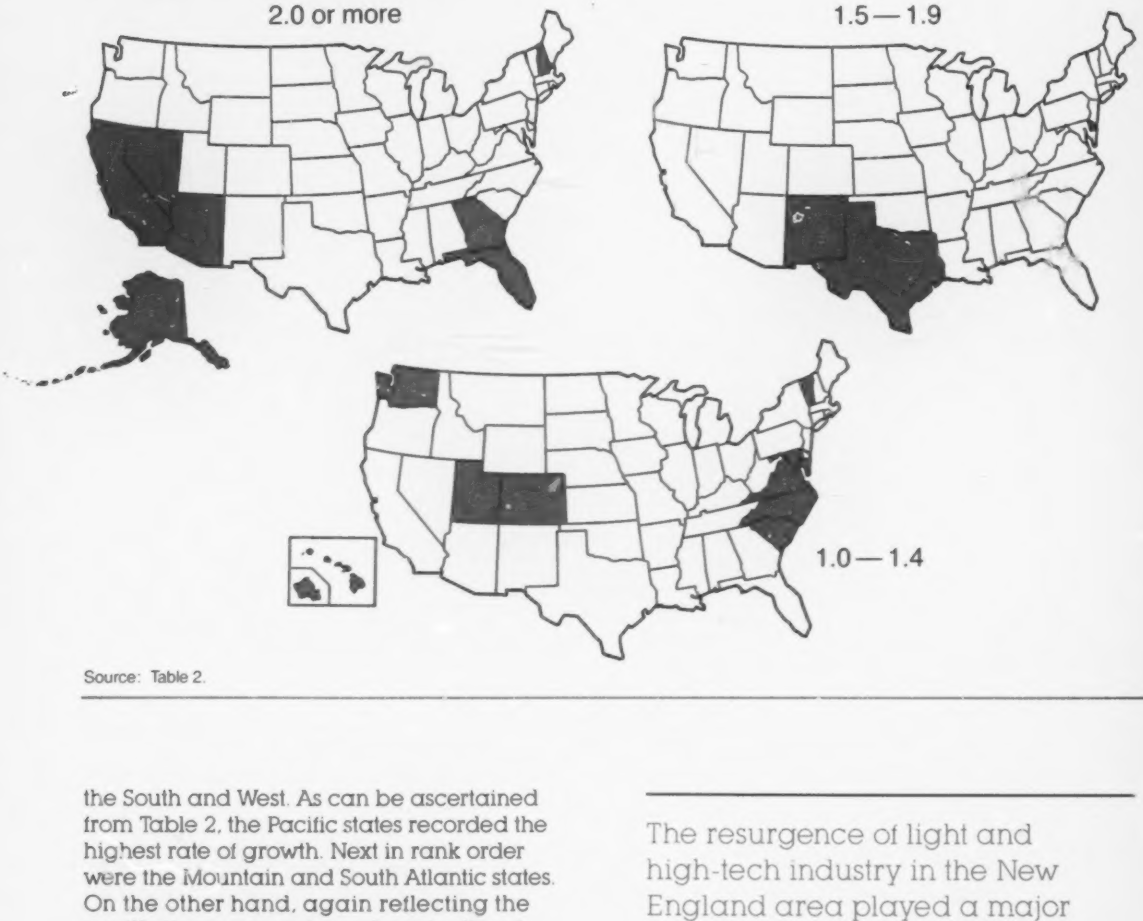
At the main productive years—ages 25-44 and 45-64—the population showed two divergent patterns. The number of men and women aged 25-44 are continuing the recent upward trend while among the 45-64-year-olds, the pattern is reversed. Thus the younger age grouping now comprises 32.0 percent of the total population compared with 23.6 percent in 1970. In January 1987, persons 45-64 comprised 18.5 percent of the population, down from 19.6 in April 1980 and 20.5 percent in 1970. Table 1 presents the number and percentage distribution of the population by age, while Figure A graphically shows the age distribution of the population and how it has shifted between 1980 and 1987.

Regional Changes

Geographically, population growth during 1986 was comparatively rapid in the South and West regions of the country. As during the first half of the 1980s, these areas of the nation—fueled by the large influx of people attempting to benefit from enhanced employment opportunities—have been increasing at a faster pace than the states in the Midwest and Northeast regions. Of the 2,227,000 increment in the country's resident population during 1986, more than 85 percent of the gain was attributed to increases in

> Population growth during 1986 was comparatively rapid in the South and West regions of the country.

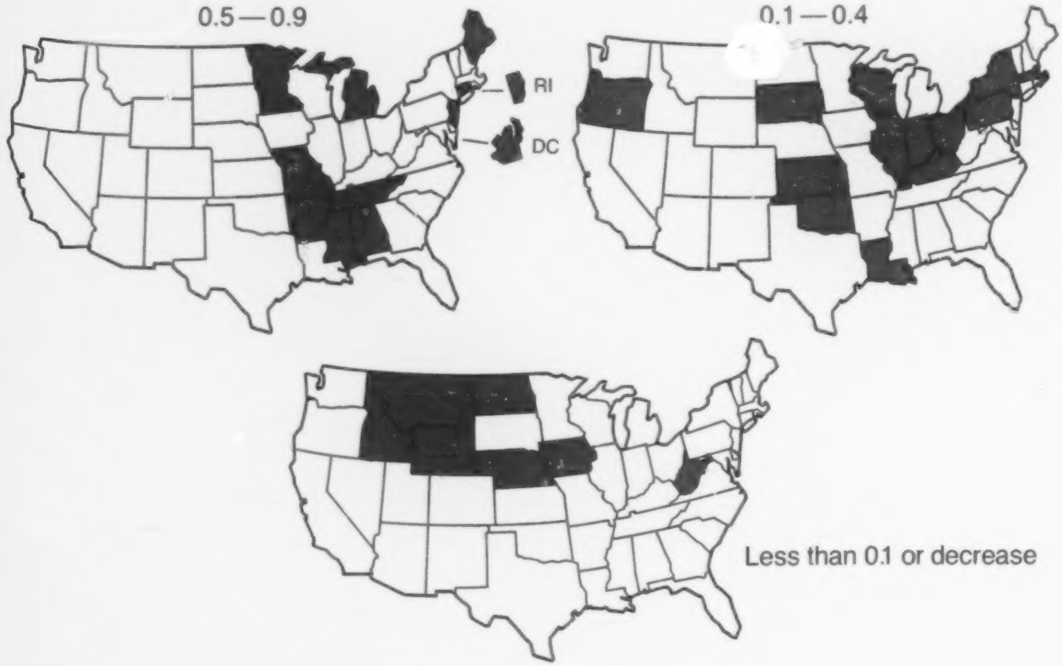
Figure B — Percent Change in the Resident Population by State United States, 1986 – 87



Source: Table 2.

the South and West. As can be ascertained from Table 2, the Pacific states recorded the highest rate of growth. Next in rank order were the Mountain and South Atlantic states. On the other hand, again reflecting the vacillating economic and agricultural fortunes, there was hardly any population growth in the West North Central states. In the East North Central and Middle Atlantic states, the 1986 relative increases were just one-third of the national average, but along with the New England division they were the only geographic areas in which the percentage gains were larger than the 10-year annual growth rates. The resurgence of light and high-tech industry in this area played a major role in attracting newcomers.

> The resurgence of light and high-tech industry in the New England area played a major role in attracting newcomers.



0.5—0.9

0.1—0.4

Less than 0.1 or decrease

Variation by State

Numerically the largest increase during 1986 occurred in California. Our most populous state, with 27,255,000 inhabitants as of January 1, 1987, increased by 576,000 during the year, or by 2.2 percent. However, this was not the largest relative gain. The honor of experiencing the highest percentage increase belongs to Arizona whose resident population rose by 3.5 percent last year. Other rapid gains were recorded in New Hampshire and Nevada (2.5 percent) closely followed by the relative gain in Florida (2.4 percent).

> Florida is now the fifth most populous state, having surpassed Illinois, and is gaining on Pennsylvania, currently ranked fourth.

Florida had the distinction of becoming the fifth largest state in the country during 1986, having surpassed Illinois; morever, it is rapidly gaining on Pennsylvania, currently ranked fourth. On January 1, 1987, there were over 11.8 million people residing in Florida, compared with 11.9 million in Pennsylvania and 11.6 million in Illinois. The shift in rank resulted from the continued rapid population gains experienced recently in Florida, while in Pennsylvania and Illinois the number of persons increased by just 0.2 percent last year. This happened to be the same relative gain that was recorded in New York, the second largest state in the nation with nearly 17.8 million inhabitants. The small gain in New York is in contrast to the declines that occurred in the early 1970s, with the result that the current population is once more approaching the pre-1980 level. Texas and Ohio are the only other states with more than 10 million residents. Here again there is a sharp contrast in the population growth rates. In Texas, the third most populous state, the relative increase during 1986 was 1.7 percent—slower than it has been over the past decade—whereas in Ohio the gain was only 0.1 percent.

Effect of Changing Economic Conditions

Changing economic conditions in the energy-related industries adversely affected the population growth of numerous states in the South and West. Previously mentioned Texas, along with Oklahoma, Louisiana and Utah all suffered economic setbacks because of the sharp reduction in oil, gas or coal prices and experienced diminished growth rates. Moreover, Montana, Wyoming, Idaho and West Virginia did not escape unscathed—they recorded population losses during 1986. The agricultural states in the Midwest also fared poorly. In the beginning of 1987 there were fewer residents in Iowa, North Dakota and Nebraska than a year earlier. South Dakota managed a small population increase.

> Changing economic conditions in the energy-related industries adversely affected the population growth of numerous states in the South and West.

It is noteworthy that every state in the New England and Mid-Atlantic divisions experienced growth rates in 1986 that were at least as large as the 10-year average annual rates. Impressive relative gains continued to be recorded in New Hampshire—a main beneficiary of the influx of new residents—while the increase in Vermont was greater than the national average. Figure B shows the relative changes in state populations during 1986. □

STATISTICAL INFORMATION, PLEASE

Q ***Why is the age distribution of the 1940 U.S. Census being used to standardize mortality rates; isn't it out of date?***

A For a number of years, the age distribution of the total population of the United States, as enumerated in the 1940 Census, has been the most commonly used national standard for age adjustment. However, the question does periodically arise as to whether a current census might be more appropriate. An earlier *SB* addressed this question and this reply is based on excerpts from that analysis.*

The use of the 1940 standard has the advantage of continuity with past published data. The National Center for Health Statistics has published age-adjusted death rates by sex and race for the total United States (or the death registration states) for every year since 1900, all calculated on the basis of the 1940 age distribution. Age-adjusted death rates (standardized on the 1940 population) for selected causes of death by race and sex for the years 1940 through 1960, and the same information for each geographic division and state for 1940, 1950, and 1960, have also been published by the National Center for Health Statistics. Many other books and studies presenting data standardized to the 1940 population are also available. The existence of such a substantial volume of material based on the 1940 standard population is an important factor in recommending the continued use of this standard. (Moreover, the age distribution of the U.S. population is now rapidly approaching the profile that existed in 1940—Ed.)

* *

Q ***How common are two-earner married couples? How has the number changed in the past decade?***

A Data from the Bureau of Labor Statistics and the Bureau of the Census show that in 1976 there were 16.7 million married couples in the United States where both spouses were employed. Today, however, this number has increased dramatically. In 1986, dual-earner married couples numbered 30.4 million—an 82 percent increase over the number a decade earlier.

During the same period, however, the number of married couple families has increased by just 8 percent.

* *

Q ***Which causes of death account for the greatest number of potential years of life lost before age 65?***

A According to the latest data prepared by the Centers for Disease Control, accidental injuries took the greatest toll in years of potential life lost (YPLL) before age 65. Accidents, homicides and suicides (all external causes of death) accounted for more YPLL than cancer and heart disease combined. The ranking for YPLL, by cause for 1985, is shown below:

Estimated Years of Potential Life Lost (YPLL) Before Age 65
United States, 1985

	YPLL (1,000s)	
Cause	Persons Dying in 1985	Percent Distribution
All causes	11,844	100.0
Accidents and adverse effects	2,235	18.9
Malignant neoplasms	1,813	15.3
Diseases of the heart	1,600	13.5
Suicide and homicide	1,242	10.5
Congenital anomalies	695	5.9
All other	4,259	35.9

Source: ***Morbidity and Mortality Weekly Report.***

Please send your questions to: Statistical Information Editor
Health and Safety Education Division, Dept. SB
Metropolitan Life Insurance Co.
One Madison Avenue
New York, NY 10010-3690

**Statistical Bulletin*, pp 5-14, Apr-Jun 1981.

"Riding Horses Again."

Metropolitan Life
AND AFFILIATED COMPANIES

What began as a fun-filled August day for Tim and his daughter Kathy ended in near tragedy when Tim dived into a swimming pool and hit his head on the bottom.

When Tim went to bed that night his head was throbbing. Thirty minutes later he lapsed into unconsciousness. The doctors told Tim's wife that he had suffered a stroke caused by the blow to his head.

As a result of his injury, Tim suffered partial paralysis on the right side of his body and a partial loss of speech.

The prognosis wasn't good. The doctors said Tim would probably walk again but only with a leg brace. And if he talked at all, it would be in short, deliberate sentences. What they were basically saying was that Tim, a salesperson, would never work again and Tim's wife would have to support the family.

With the help of Metropolitan's unique and comprehensive LTD program, Tim's doctor referred him to a rehabilitation institute where he relearned such basic functions as how to walk and tie his shoes.

With the cooperation of his employer, the guidance of his physician and the help of his wife, Tim was able to return to his sales job part-time. Since his wife was allowed to assist him with his job, the transition to full-time was made easier.

Now, more than a year later, Tim is doing great. He's still in sales but with another well-known company. And by the summer he hopes to be once again riding horses.

This story illustrates a typical case situation.

For further information on Metropolitan's Long Term Disability program write to:
Department M
Statistical Bulletin, Area 16-UV
Metropolitan Life Insurance Company
One Madison Avenue
New York, N.Y. 10010-3690

METROPOLITAN IS ONE OF THE LARGEST LTD CARRIERS, PROVIDING ECONOMIC SECURITY FOR ALMOST TWO MILLION PERSONS.

LET METROPOLITAN HELP YOU GET YOUR EMPLOYEES BACK TO WORK.

Historical Perspectives

40 YEARS AGO

IN THE **1948** STATISTICAL BULLETIN

A historical review of the U.S. population growth by geographic area between 1870 and 1947 showed a continued westward movement of the population. Between the 1940 Census and 1947 the number of persons residing in the Pacific states increased 40 percent by adding 3,892,000 inhabitants. This increase was one-third of the total U.S. gain during the same period. By state, the largest population increase was in California, which added about three million persons—three-quarters of the gain recorded in the Pacific region. On the other hand, the population in the East South Central and West North Central divisions remained virtually unchanged. Throughout the entire period reviewed, the Pacific Coast states had an increasing proportion of the U.S. population. In 1870 only 1.8 percent of the U.S. population resided within the Pacific states, but this increased to 9.5 percent by 1947. Since 1940 the other relatively new areas of the country—the Mountain and the West North Central states—did not keep pace with the population growth of the country as a whole. The Eastern Seaboard and the South continually accounted for a declining proportion of the population. (The Pacific states continue to grow at a remarkable pace and now account for almost 15 percent of the U.S. population—Ed.) (Page 8, January) □

Fatal accidents in the U.S. population were occurring less frequently among women than among men. Nonetheless, during the 1940s about 30,000 female lives were lost annually from accidents. Analysis of the trend in the accident death rate, by type, for white females aged 1-74 years among Met Life Weekly Industrial policyholders (1911 to 1946) showed a mortality reduction of almost 50 percent. (The 1946 age-adjusted death rate for accidents among female policyholders was 19.6 per 100,000.) Most of the decline was due to a decrease in mortality from burns and scalds (excluding burns from conflagrations). The 1946 death rate from such causes among female policyholders was 1.4 per 100,000 down 86 percent from the 1911 rate of 10.3. Modernization of the American home with electricity replacing oil lamps, and gas or electric ranges replacing the coal stove—all helped to reduce mortality from burns and scalds. Fatal falls also declined considerably over the years, and by 1946 the rate was one-half the magnitude in 1911. However, falls still ranked second to motor vehicles as a cause of accidental fatalities. (Since the study was limited to persons under age 75, it did not reflect the extremely high death rate caused by falls at advanced ages.) Motor vehicle accident records, available since 1925, showed a downward trend after the peak rate of 12.7 per 100,000 in 1931. (Page 7, February) □

1948 marked the 30th anniversary of the influenza pandemic of the summer of 1918, and Metropolitan Life statisticians recounted its magnitude. An estimated 20 million people in the United States had the flu and 550,000 died of the disease or its complications. Based on the experience among Met Life Industrial policyholders, the 1918 age-adjusted death rate from influenza and pneumonia was 575 per 100,000, more than four times the average for the preceding seven years. During the last three months of 1918 when the epidemic was at its peak, the death rate on an annual basis, was more than 11 times the rate for the preceding 12-month period. Since then, the introduction of serum therapy, sulfa drugs and penicillin helped reduce the mortality from influenza and pneumonia. By 1947 the death rate from these causes had fallen to 17.4 per 100,000 policyholders, an all-time low. Both sexes and every age group shared in the reduction in mortality. However, the battle to eradicate these diseases was still not won. (In 1986 about 70,000 persons died from pneumonia and influenza, yielding a United States age-adjusted mortality rate of about 29.0 per 100,000—Ed.) (Page 8, September) □

Chronic diseases dominated the mortality picture in the mid-1940s, as acute conditions were being controlled. With the aging of the U.S. population, the chances of dying from chronic diseases increased. Data of the U.S. population showing chances (at birth) of eventually dying from various chronic conditions were presented for selected years from 1901 to 1945. According to mortality conditions prevailing at the turn of the century, more than half the children born at that time would eventually die from chronic conditions. By 1920 the chances had increased to two in three, and by 1945 the ratio had risen to more than four in five. Throughout the 4½ decades, the chances of eventually dying from chronic diseases were greater for women than for men. Data for the same period showed the decreasing probability of dying from acute diseases. If the mortality conditions at the beginning of the century had prevailed unchanged, about one-third of those born then would have died from acute conditions. This proportion continually decreased, and by 1945 the chances were less than one in 10. As in the mid-1940s, today chronic diseases are not only leading causes of death but they are major causes of illness. (Page 8, July) □

SB-1 (3-88) Printed in U.S.A

B6045-1
7/13/88

etropolitan Life
D AFFILIATED COMPANIES

SB
STATISTICAL BULLETIN

Vol 69 No 3 Jul – Sep 1988

2 **The Changing Picture in Retiree Economics** Mark Weinstein, Director of Planning, Met Life's Pensions Department, discusses critical retirement issues

9 **Future Financial Security** In this thoughtful commentary Met Life Executive Vice-President Ted Athanassiades suggests action now for better retirement prospects in the future

10 **New Longevity Record in the United States** New tables and good news in U.S. life expectancy

18 **Births by Cesarean: Cost Changes, 1982-83 to 1986** Analysis reveals an escalating number of cesarean sections and higher costs as well

26 **Trends and Regional Differences in Breast Cancer Mortality** A study of the national and regional dimensions of this major problem

Contents

Statistical Bulletin Vol. 69, No. 3, Jul - Sep 1988

1 From the Editor's Desk

2 The Changing Picture in Retiree Economics
Mark Weinstein, Director of Planning
Pensions Department, Metropolitan Life Insurance Company

9 Commentary: Future Financial Security
Ted Athanassiades, Executive Vice-President
Metropolitan Life Insurance Company

10 New Longevity Record in the United States

16 Capsule Briefs

18 Births by Cesarean: Cost Changes 1982-83 to 1986

26 Trends and Regional Differences in Breast Cancer Mortality

31 Jacob Baar: An Appreciation

32 Statistical Information, Please

Back Cover: Historical Perspectives

John J. Creedon
President and
Chief Executive Officer

Donald A. Odell
Executive Vice-President

Paul S. Entmacher, M.D.
Senior Vice-President and
Chief Medical Director

Doris Bressler
Director
Health and Safety Education

Charles B. Arnold, M.D., M.P.H.
Editor-in-Chief

Joan W. Parks
Managing Editor

Stanley Kranczer
Margaret Mushinski
Contributing Editors

Hazel Forbes
Associate Contributing Editor
and Editorial Quality Editor

Ada Arieta
Editorial Assistant

Stanley Kranczer
Business Manager

Guru S. Bale, Ph.D.
John Sentowski
Technical Specialists

Corporate Health Strategies
Data Contributor

Paul Verga
Art Director

Lawrence Studio, Inc.
Graphic Design

The Statistical Bulletin (ISSN 0741-9767). Copyright 1988 Metropolitan Life Insurance Company, One Madison Avenue, New York, NY 10010. Published four times a year by Metropolitan Life Insurance Company. John J. Creedon, President and Chief Executive Officer; Robert G. Schwartz, Chairman; Arthur G. Typermass, Senior Vice-President and Treasurer; Richard M. Blackwell, Vice-President and Secretary. Printed in U.S.A. Subscriptions: U.S., its territories and Canada: $50 for one year [illegible] $40 [illegible]. Outside U.S. and Canada add $10 for postage and handling. Send to: Statistical Bulletin, P.O. Box [illegible], Baltimore, MD 21[illegible]. [illegible] at New York, N.Y. [illegible]

Postmaster: send address changes to Williams and Wilkins, 428 E. Preston St., Baltimore, MD 21202.

[illegible] Statistical Bulletin [illegible] Metropolitan [illegible] One Madison Avenue, New York, NY [illegible]

From the Editor's Desk

Have you considered your retirement financial needs recently? In this issue, Mark Weinstein, Director of Planning, Pensions Department at Met Life, offers a challenging view of retirement issues in "The Changing Picture in Retiree Economics." *SB* must admit the picture does not seem rosy. Unless some changes are made soon, the lifestyles of future retirees would appear to suffer. We counsel reading this article in the spirit of Benjamin Franklin who said, "To be forewarned is to be forearmed."

Retirement Financial Reforms?

In a related commentary entitled, "Future Financial Security," Executive Vice-President Ted Athanassiades suggests that action is needed *now* for better, future retirement prospects. Among the parties participating in retirement financial reforms should be the federal government, the business community, as well as individual employees.

Life Expectancy News

Retirements are the furthest things from their minds, but for 1987's newborns the life expectancy news was very good. They can expect to live longer—to 75.0 years to be exact—than any other cohort in U.S. history, as *SB* forecasts in this issue. Like predictions? Would you like to attempt one about the status of the world when this cohort reaches its 65th birthday in the year 2052?

Widely-Used Contraception

Do you know what is rapidly becoming the most widely-used single form of contraception in the U.S.? If you answered surgical sterilization, you are right. This news item, as well as others of broad reader interest, may be found in "Capsule Briefs."

Cesarean Popularity

Cesarean sections continued to gain in popularity as a procedure among obstetricians. Whereas nationally in 1968, 4-6 percent of all babies were delivered by this method, in 1986 the rate had exceeded 24 percent! Among Metropolitan Life Group Department's policyholders in 1986 the cesarean rate was even higher (over 27 percent). Physician charges for cesareans had grown by 60 percent during the preceding four years. In the next issue, as part of *SB*'s continued coverage of medical care charges, we will analyze upward changes (1982-86) in physician and hospital charges for common surgical procedures. Watch for it.

Breast Cancer Deaths

After age 30, the likelihood of breast cancer is an issue for every American woman. In this *SB*, we explore the national and the regional dimensions of deaths from this dread disease. Despite the extensive early detection efforts, breast cancer remains a major cause of cancer deaths in women. A medical science breakthrough in prevention cannot come too soon.

On that cautionary note, I wish you good reading.

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

The Changing Picture in Retiree Economics

One of the great American dreams is a financially secure retirement. This encompasses not only the basic necessities of life but also the ability to travel and to enjoy various interests. Many people have this expectation because of their faith in the so-called three-legged stool of retirement economics: personal savings, employer retirement programs and the Social Security system. However, there are economic and demographic trends that are weakening each leg, with the result that the retirement outlook may not be as promising as the one expected. Further, there may be factors other than those related to the three-legged stool that could also cloud the retirement outlook. Just as the baby boom generation has found it more difficult to achieve, let alone exceed, the pre-retirement living standards of its parents, it may find the same problem with respect to retirement.

Personal Savings — the First Leg

Personal savings in the United States are at an all-time low and have been generally falling since 1973. As Figure A shows, in 1987 the savings rate was only 3 percent of disposable income. This is in sharp contrast with Japan and Western Europe where savings rates have averaged 15 percent, and 7 to 10 percent, respectively. The low rate of personal saving in our country may ultimately have significant negative implications for the individual savings portion of retirement income.

> Personal savings in the U.S. are at an all-time low and have been generally falling since 1973.

Hopefully, this trend may be mitigated by several factors. First, the baby boom generation is just now entering the age groups that save the most — namely ages 35-65. Second, the large degree of home ownership understates the savings rate. On the other hand, many economists are concerned that the baby boomers are behaviorally more consumption-oriented than previous generations and will not exhibit the same savings tendencies as their parents have in the asset accumulation stage of their life cycle.

Employer-Sponsored Savings and Retirement Programs

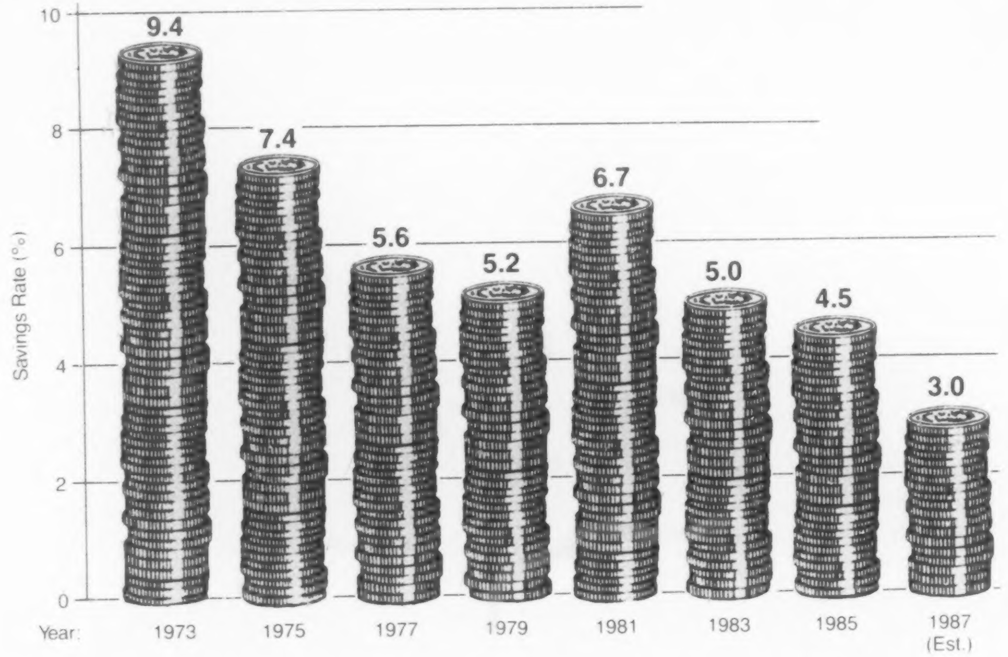
Pension coverage, which had been increasing for many years, is starting to decline. Retirement programs covered 22 percent of Americans in 1950, peaked at 45 percent in 1981, and by 1985 declined to 43 percent.

Increasingly, employees are not working for the same employer over their entire career. This is attributed to industry/corporate restructuring and downsizing, and a tendency of workers to change jobs more frequently. The consequence is increased worker turnover, which most often is detrimental to an individual's company retirement benefit. This phenomenon is exhibited in both defined-benefit plans (traditional pension plans) and defined-contribution plans (employee savings and profit sharing plans).

In defined-benefit plans (where the retirement benefit is based on such items as years of service and the final average salary), a worker who changes jobs four times in a career will typically receive only

> Changing worker dynamics — greater job turnover and a shift toward defined-contribution plans — are ominous trends in terms of ultimate retiree income.

Figure A — Savings Rate, United States, 1973 – 1987



Source: Board of Governors of the Federal Reserve System, *Federal Reserve Bulletins*, 1979 – 87, Chart 2.17, and Barron, James, "More and More, Americans Are Choosing to Save Less," *New York Times*, p. 5, November 29, 1987.

50-60 percent of the benefit of a comparable worker who worked continuously for the same employer.

With regard to defined-contribution plans, the problem is created when employees change jobs because they typically receive a lump-sum distribution representing their company savings. For all workers combined, more than two-thirds spend their distribution. Further, since the size of the benefit is directly correlated with the number of years worked, those employees who change jobs frequently are likely to receive a series of small payments. These payments are even less likely to be saved. Only slightly more than one-fourth of the employees who received less than $5,000 bank the money.

Defined-benefit plans are generally more advantageous for workers. With this type of pension plan, most vested workers who change jobs will receive some retirement benefit because they usually are not offered a lump-sum alternative. However, there is a growing trend toward defined-contribution plans. As Table 1 shows, these programs were the primary form of company retirement plan for only 13 percent of active pension plan participants in 1975, but rapidly increased to 29 percent by 1985. Figure B graphically shows the trend in the rapidly expanding proportion of workers whose primary company retirement benefit is in the form of defined-contribution plans. Thus, the changing worker dynamics—greater job turnover and a shift toward defined-contribution plans—are ominous trends in terms of ultimate retiree income.

As a result of tax reform, new restrictions on defined-benefit plans will probably

Table 1—Private Pension Plan Participants by Type of Plan, United States, 1975–1985

Year	Defined Benefit	Defined Contribution	Total
	Primary Plan Participants		
	Number in Thousands		
1985	28.922	11.778	40.700
1984	29.812	9.902	39.714
1983	29.576	9.395	38.971
1982	29.361	8.120	37.481
1981	29.687	7.224	36.911
1980	29.736	6.203	35.939
1979	29.008	5.790	34.798
1978	28.613	5.424	34.037
1977	27.655	5.141	32.796
1976	27.119	4.591	31.710
1975	26.819	3.921	30.740
	Percent Distribution		
1985	71.1	28.9	100.0
1984	75.1	24.9	100.0
1983	75.9	24.1	100.0
1982	78.3	21.7	100.0
1981	80.4	19.6	100.0
1980	82.7	17.3	100.0
1979	83.4	16.6	100.0
1978	84.1	15.9	100.0
1977	84.3	15.7	100.0
1976	85.5	14.5	100.0
1975	87.2	12.8	100.0

Source Ippolito Richard A and Kolodrubetz Walter W. *The Handbook of Pensions Statistics 1985* Commerce Clearing House 1986 pp 42, 82 and the U S Department of Labor Office of Pensions & Welfare Benefit Programs unpublished estimates 1982-1985

feed the forces spurring the growth of defined-contribution plans. Overfunding of defined benefit plans, which may have been viewed as conservative and prudent, is now more limited. For example, funding of defined-benefit plans is restricted to the receipt of an annual benefit of $94,023. In addition, annual payments from defined-benefit pension plans are generally limited to $112,500, with any amounts over the limit subject to an excise tax.[8]

Social Security— More Problems Ahead?

The forthcoming dramatic change in the age distribution of our population is probably the single largest element affecting public policymaking regarding Social Security retirement benefits. Because of the well documented shift toward a larger proportion of elderly —expected to take place in the first half of the 21st century[9]—along with the increasing proportion of the population covered by Social Security,[10] there will be fewer active workers supporting each retirement beneficiary.

For example, there were 14 workers for each retiree in 1950, five in 1960, just over three currently, and by 2025 there are expected to be only two.[11] With a "pay as you go" system, this puts an enormous burden on future workers, and modifications have already been implemented in an attempt to shore it up. Most notable are the regulations designed to accelerate accumulation of reserves for the baby boomer retirement phase and to gradually increase the retirement age at which full benefits are paid.

> A crucial question will be the willingness of successive generations to fully support the system at their expense, particularly when leveraged by the disproportionate elderly population.

Politically, these alterations were not easy to make. However, they were made, to a large degree, by a population that will bear the impact of these changes. As this generation moves into retirement, a crucial question will be the willingness of successive generations to fully support the system at their expense.

particularly when such expense is leveraged by the disproportionate elderly population. There has already been a peak in the percentage of career average annual pre-retirement income replaced by Social Security, and the replacement rate is declining, as shown in Table 2. If this trend continues unabated, the third leg of retirement income will be seriously weakened.

One option to bolster the Social Security system is to extend "means testing" to further limit the benefit to well-off retirees. In the abstract, this would only affect those with substantial other resources. But as often occurs, once a revenue raising program is put in place it can be subject to significant adjustments. The possibility then arises that the elderly middle class will be made to bear the brunt of reduced benefits.

Another concern is the Social Security benefit received by women relative to men. Women are already adversely affected by a lower pension benefit resulting from a work history typified by lower paying jobs as well as interrupted careers because of childbearing. "Social Security is structured to reward life patterns (e.g., male breadwinner and female homemaker, and lifelong

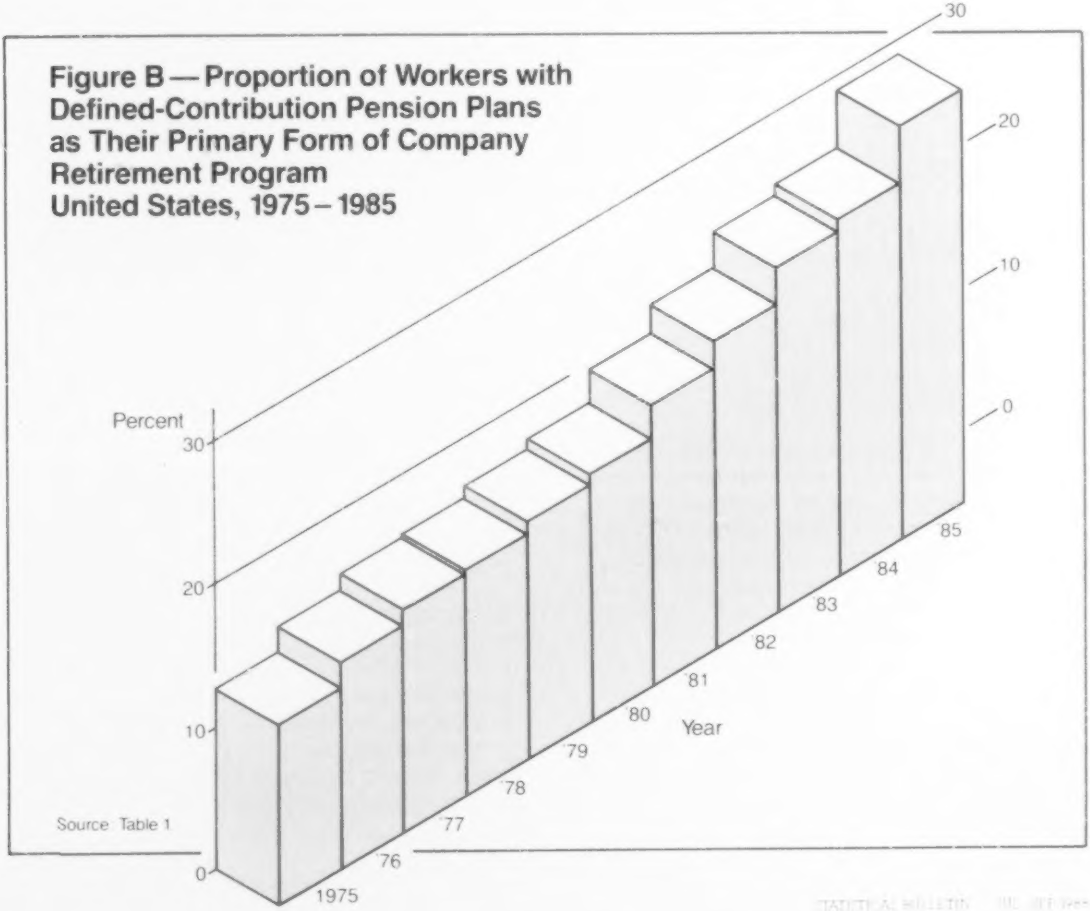


Figure B — Proportion of Workers with Defined-Contribution Pension Plans as Their Primary Form of Company Retirement Program United States, 1975–1985

Source: Table 1

Table 2—Earnings Replaced by Social Security for Retired Single Workers Aged 65 With Average Earnings History

Year	Percentage of Income Replaced
1950	30.0
1958	34.2
1967	36.3
1975	55.9
1983	45.8
1986	40.9

Source: Schieber, Sylvester, J., *Social Security: Perspectives on the System*, Employee Benefit Research Institute, 1982, pp. 26, 39-40, and Social Security Administration, Office of the Actuary, unpublished data

> Women are adversely affected by a lower pension benefit resulting from lower paying jobs as well as interrupted careers because of childbearing.

marriages) that are becoming much less representative of modern life. The net result is that Social Security benefits are not meeting the income security needs of women in today's world as well as they did some 40 years ago." Since women make up 72 percent of the elderly poor, this is particularly important.

There are some positive indicators. The percentage of the population covered by Social Security has continued to grow, leaving fewer people out of the safety net. Lower earners' Social Security benefits will continue to constitute a higher proportion of their pre-retirement earnings (replacement rate) than higher income individuals (who presumably save more and receive better pension coverage). Also, it is by no means certain that future generations will feel or act less responsibly concerning the support of the elderly. Social Security relieves children, to some degree, from having to support their retired parents. But the pressure for intergenerational conflict remains.

Other Threats to Retirement Income

Life expectancy continues to rise. This normally encouraging development has numerous serious implications for retirees. Accumulated savings must be parceled out over a longer period, which may mean that a smaller amount is available for any single post-retirement period. Similarly, individual annuities would be expected to pay less as longevity increases, all other factors being equal.

Perhaps even more serious, as the mortality rate declines, morbidity in old age can be expected to increase. Even with Medicare, health care is a major drain on retiree savings. Medicare does not cover all health care costs, as many non-elderly believe. This situation is particularly acute for long-term illnesses, which is one of the major reasons for legislative consideration of catastrophic illness insurance. Nonetheless, the elderly pay three times as much out-of-pocket expenses for health care as non-elderly. As individuals live longer, this will have a major impact on their retirement income.

One of the most well-recognized problems associated with increased longevity is the impact of inflation. While many companies with defined-benefit pension plans give occasional cost-of-living increases to their retirees, very few guarantee them as part of the plan, and most of them do not come close to matching the rate of inflation. Personal savings can also be decimated by inflation unless the retiree makes the "right" investment choices. Social Security is, however, currently indexed to the cost of living.

In the United States there is a distinct trend toward early retirement. Despite the legislated right to retire at a later age, more and more people are retiring early. This usually means a lower pension coupled with a smaller accumulation of savings and possibly lower Social Security benefits, all spread over a longer period of time. However, many early retirees are taking on a new full- or part-time job, reducing the potential negative impact.

Finally, there is the more general economic issue of the decreasing rate of growth in productivity. A continuation of this trend would result in a reduction in the overall standard of living of Americans, increasing pressure on inflation as well as the potential for worker-nonworker conflict.

Conclusion

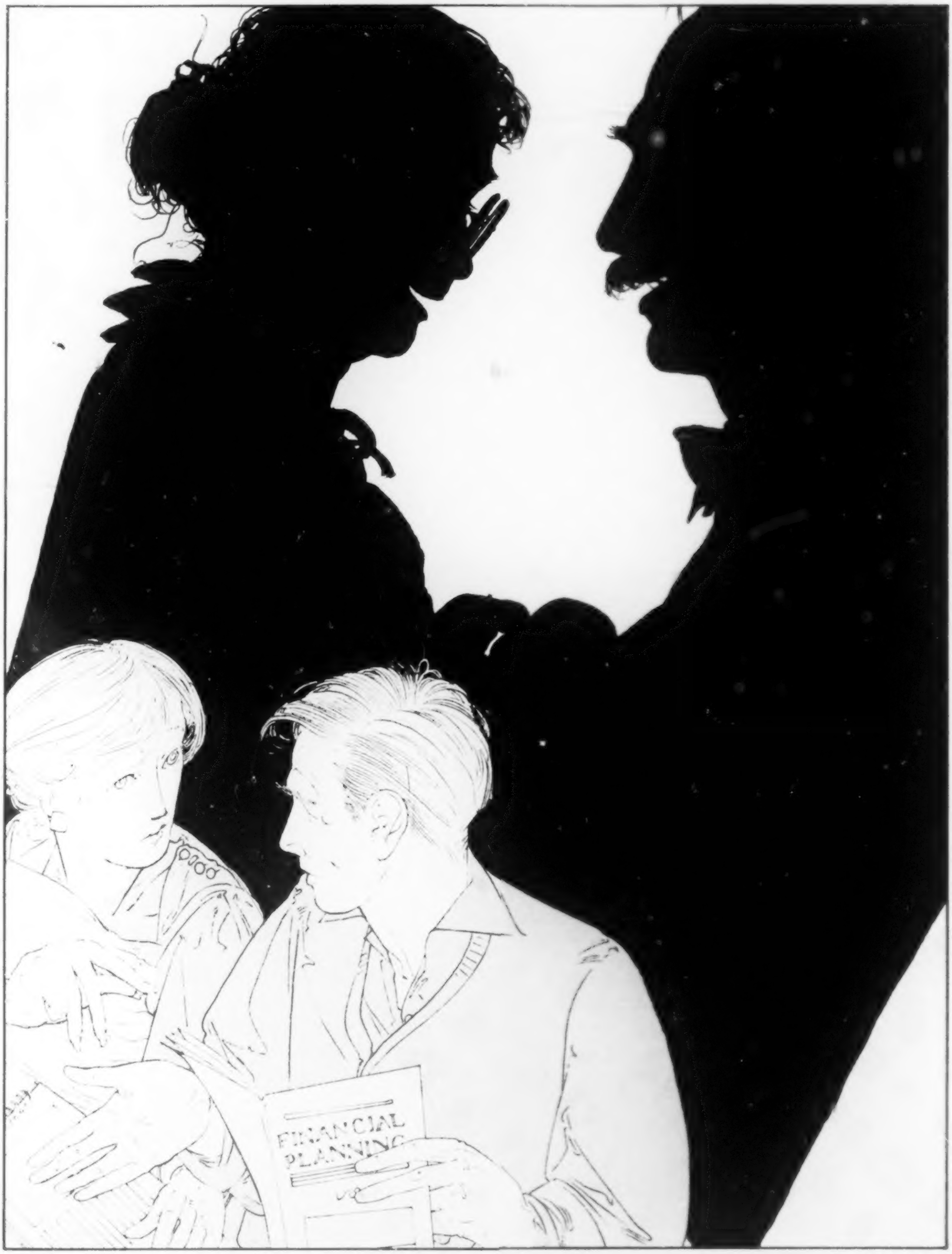
Any of the previously mentioned trends taken separately would probably not be cause for major alarm. However, together they raise very real concerns regarding the future well-being of an increasingly sizable portion of our society. Women in particular are at risk.

There has been much discussion of how well off many current retirees are in comparison with those just 20 years ago. But we may now be witnessing the golden age of the golden years. Just as the baby boom generation is having more difficulty making ends meet than their parents did for the same quality of life, our future retirees may too soon come to realize that their financial security is not what they expected. Public policy needs to promote long-term individual and on-the-job saving, and to ensure the integrity of all of our retirement programs. □

Mark H. Weinstein
Director of Planning
Pensions Department
Metropolitan Life Insurance Company

References

Gibbs, Nancy R., "Grays on the Go," *Time*, p. 70, February 22, 1988.
Barron, James, "More and More Americans Are Choosing to Save Less," *New York Times*, p 5, November 29, 1987.
Ibid.
Stricharchuk, Gregory, "Retirement Prospects Grow Bleaker for Many as Job Scene Changes," *Wall Street Journal*, p 1, August 26, 1987.
Carroll, Donald C., and Sheppard, C. Stewart, *Working in the Twenty-First Century*, John Wiley & Sons, p 82, 1980.
"Pension Portability and What It Can Do for Retirement Income: A Simulation Approach," pp. 9-14, *EBRI Issue Brief, Number 65*, April 1987.
Andrews, Emily S., *The Changing Profile of Pensions in America*, Employee Benefit Research Institute, p 163, 1985.
Tax Reform Act of 1986, Sections 415(b), 402(g) (1), 4981A(c), IRS News Release, IR-88-18, p 20, 284, February 12, 1988.
U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 952, Table 6, "Projection of the Population of the United States, by Age, Sex and Race: 1983 to 2080," Washington, D.C., 1984.
Schieber, Sylvester J., *Social Security: Perspectives on the System*, Employee Benefit Research Institute, pp. 39-40, 1982.
Social Security in America's Future, Final Report of the National Commission on Social Security, p 16, 1981.
Gibbs, Nancy R., Ibid., p 75.
Andrews, Emily S., Ibid, pp. 62-64, and "Retirement Income Opportunities in an Aging America: Income Levels and Adequacy," Employee Benefit Research Institute, p 20, 1982.
Robertson, A. Haeworth, *The Coming Revolution in Social Security*, Reston Publishing Company, p 153, 1981.
"Coming of Age: Toward a National Retirement Income Policy," *President's Commission on Pension Policy*, p 25, 1981.
Schieber, Sylvester J., Ibid., p 26, pp. 39-40.
Statistical Bulletin, p 8, Jul-Sep 1987, and p 19, Jan-Mar 1988.
"An Aging Nation Presents New [illegible] the Health Care System," *Public Health* [illegible] p 1, January-February 1988.
Gibbs, Nancy R., Ibid., p 65.
Ippolito, Richard A., and Kolodrubetz, [illegible] W., *The Handbook of Pension Statistics*, Commerce Clearing House, Inc., pp. 177-187, 1986.
"Congress Miscalculated if it Expected Senior Citizens to Continue Work," *Wall Street Journal*, p 1, August 4, 1987.
Gibbs, Nancy R., Ibid., p 68.
"Social Security in America's Future," Ibid., p 17.


FINANCIAL PLANNING

David Johnson

Commentary

Future Financial Security

Retirement is often referred to as the "golden years." Is it possible, however, that we are in the midst of the golden era of those years? Or, stated another way, is it possible that the living standards of our retired population may have peaked? Questions like these *must* be asked today if 21st century retirees are to be financially secure. Clearly, unfettered continuation of current economic and demographic patterns makes a less secure future seem very likely.

Can this bleak forecast be avoided? Furthermore, can the living standards of the elderly in the future be made even more financially secure? Undoubtedly, they can be. It will, however, take a lot more effort —coordinated effort by government, by the business community, and mainly by individuals.

Individual Efforts

It all comes down to a better balance between current wants and future needs. We, as individuals, must show greater willingness to make present sacrifices in consumption and to save more, if we want a retirement secured by adequate financial capital. It is as simple as that. If we consume now, we will pay for it later.

Role of Business and Government

The business community, as employers, can make it easier for employees to save. In addition to the existing array of benefit plans, there are ways to make it even more convenient and attractive for employees to save systematically at their place of work.

Government also has a role in the degree to which we save for retirement. Governmental regulation provides both incentives and disincentives for individual and employer-employee savings and retirement efforts. What is needed is a vision that focuses on a long-term, coordinated effort to promote retirement saving by individuals.

> What is needed is a vision that focuses on a long-term coordinated effort to promote retirement savings by individuals.

Government can also help improve the living standards of our retired population by balancing its budget. The trade-off for deficit spending is future inflation. Inflation is perhaps the most insidious form of attack on the retirement standard of living. As Americans continue to live longer, supported mostly by fixed incomes and limited savings, increases in the cost of living will push more and more people toward the poverty level.

There is no reason why Americans cannot continue to enjoy improved living standards during their golden years. By working toward a common set of interrelated goals based on long-term saving and capital formation, and by equitably sharing the sacrifices as well as the rewards, we can ensure the financial security of future generations. ☐

Ted Athanassiades
Executive Vice-President
Metropolitan Life Insurance Company

New Longevity Record in the United States

A new record for expectation of life at birth in the United States was established last year. According to the 1987 preliminary life tables prepared by the Metropolitan Life Insurance Company, average future lifetime for all newborns rose to 75.0 years, or 0.1 years higher than in 1986. Although both values are still subject to revision, they represent increases of 0.3 years and 0.2 years, respectively, over the final figure of 74.7 years in 1985.

Life expectancy for both infant boys and girls also reached new peaks. In 1987 expectation of life at birth for boys was 71.4 years and for girls 78.4 years — a gain of 0.1 years for each. Currently the longevity advantage of girls is 7.0 years — or the same margin as in the past 3 years.

Life expectancy for both infant boys and girls reached new peaks in 1987. Average future lifetime for all newborns rose to 75 years.

Past infancy, expectation of life in 1987 at ages 25, 45 and 65 recorded new highs. At age 25 average remaining lifetime for both men and women increased by 0.1 years to 48.4 years and 54.7 years, respectively. These expectancies represent increases over 1985 of 0.3 years for men and 0.2 years for women. Similar longevity patterns were observed for men and women aged 45 and 65. For example, among men aged 45 the preliminary 1987 life table indicates that expectation of life established a new all-time high of 30.2 years — 0.1 years more than in 1986 and 0.3 years higher than in 1985. Among men aged 65, average remaining lifetime rose to 14.9 years in 1987. This longevity value was 0.1 years greater than the previous record of 14.8 years reported in 1986 and 0.3 years higher than the 14.6 years experienced in 1985. Among women at ages 45 and 65 the average future lifetime last year was 35.6 years and 18.7 years, respectively.

Expectation of life at age 85 is more sensitive to the underlying assumptions used in the calculations and, as a result, fluctuates easily. In 1987 average remaining lifetime at age 85 was 6.1 years for both sexes combined, 5.2 years for men and 6.5 years for women. These longevity figures, in all three instances, are the same as the provisional 1986 values and are 0.1 years higher than the 1985 figures.

Infant Deaths

Life expectancy in the United States increased slightly during 1987 and the long-term outlook for additional improvement is favorable. However, future gains will depend on continued progress in curtailing mortality from the leading causes of death. Major unknowns on the immediate horizon are the ominous implications of AIDS and the magnitude of associated deaths. Somewhat

Major unknowns on the immediate horizon are the ominous implications of AIDS and the magnitude of associated deaths.

Table 1 — Expectation of Life and Chances of Surviving to Specified Age United States, 1900–02 to 1987

Sex and Age		1900 – 02	1949 – 51	1979 – 81	1985	1986*	1987†
		Expectation of Life (in Years)					
Both Sexes:	0	49.2	68.1	73.9	74.7	74.9	75.0
	25	39.1	46.6	50.8	51.4	51.5	51.6
	45	24.8	28.5	32.3	32.7	32.9	33.0
	65	11.9	13.8	16.5	16.7	16.9	17.0
	85	4.0	4.7	6.0	6.0	6.1	6.1
Male:	0	47.9	65.5	70.1	71.2	71.3	71.4
	25	38.4	44.4	47.4	48.1	48.3	48.4
	45	24.1	26.6	29.2	29.9	30.1	30.2
	65	11.5	12.7	14.2	14.6	14.8	14.9
	85	3.8	4.4	5.1	5.1	5.2	5.2
Female:	0	50.7	71.0	77.6	78.2	78.3	78.4
	25	39.9	49.0	54.2	54.5	54.6	54.7
	45	25.4	30.6	35.2	35.4	35.5	35.6
	65	12.2	15.0	18.4	18.6	18.6	18.7
	85	4.1	4.9	6.4	6.4	6.5	6.5
		Chances per 1,000 of Surviving From Birth to Specified Age					
Both Sexes:	25	748	947	971	975	975	975
	45	624	896	936	943	942	942
	65	409	676	771	787	788	789
	85	61	158	280	293	299	305
Male:	25	735	938	964	969	969	969
	45	608	878	916	925	923	923
	65	387	616	706	729	730	732
	85	52	118	180	194	202	210
Female:	25	761	956	979	982	982	982
	45	641	915	956	961	961	961
	65	432	741	835	844	846	846
	85	71	207	378	388	392	395

*Provisional.
† Estimated.
Source: 1900 – 02 to 1986 from the National Center for Health Statistics.
1987 data computed by the Health and Safety Education Division, Metropolitan Life Insurance Company.

counterbalancing the negative AIDS forecast is the continued diminishment in infant mortality. In 1987 infant deaths declined to an all-time low of 10.0 per 1,000 live births. Thus, this marks the 25th consecutive year in which impressive gains have been achieved in reducing mortality among our very young.

In 1987 infant deaths declined to an all-time low of 10 per 1,000 live births

The current slowdown in longevity improvement is in sharp contrast to the marked gains of the past. As may be ascertained from Table 1 and the figure, between 1900-02 and 1949-51 expectation of life among newborns rose by 17.6 years for boys—from 47.9 years to 65.5 years—and 20.3 years for girls—from 50.7 to 71.0 years. During the next 30 years the gains slowed considerably, but there still was an additional enhancement of 4.6 years for infant boys and 6.6 years for girls. Since 1979-81 the average future lifetime for baby boys increased by 1.3 years—maintaining the post-midcentury annual improvements—while that for girls rose by 0.8 years.

Sex Differentials

Long-term dramatic increases in longevity are reflected in the improved chances of survival. Since expectation of life is higher among women, it is not surprising to note that the probabilities of reaching a specific age are somewhat greater for women than for men. These chances are presented in the lower tier of Table 1. As may be observed, the likelihood of living to age 25 is currently 982 per 1,000 among women and 969 per 1,000 among men. At the beginning of the century the corresponding chances were 761 per 1,000 and 735 per 1,000, respectively. These values indicate that the chances of surviving to the quarter century mark improved by around 30 percent for both men and women since 1900-02. Significantly larger relative gains occurred at the advanced ages. For example, the probability of reaching age 65 rose by nearly 90 percent among men—from 387 per 1,000 in 1900-02 to 732 per 1,000 in 1987. During this time period, the likelihood of surviving from birth to age 65 among women almost doubled. At the start of the 20th century the chances were 432 per 1,000 and increased to 846 per 1,000 last year.

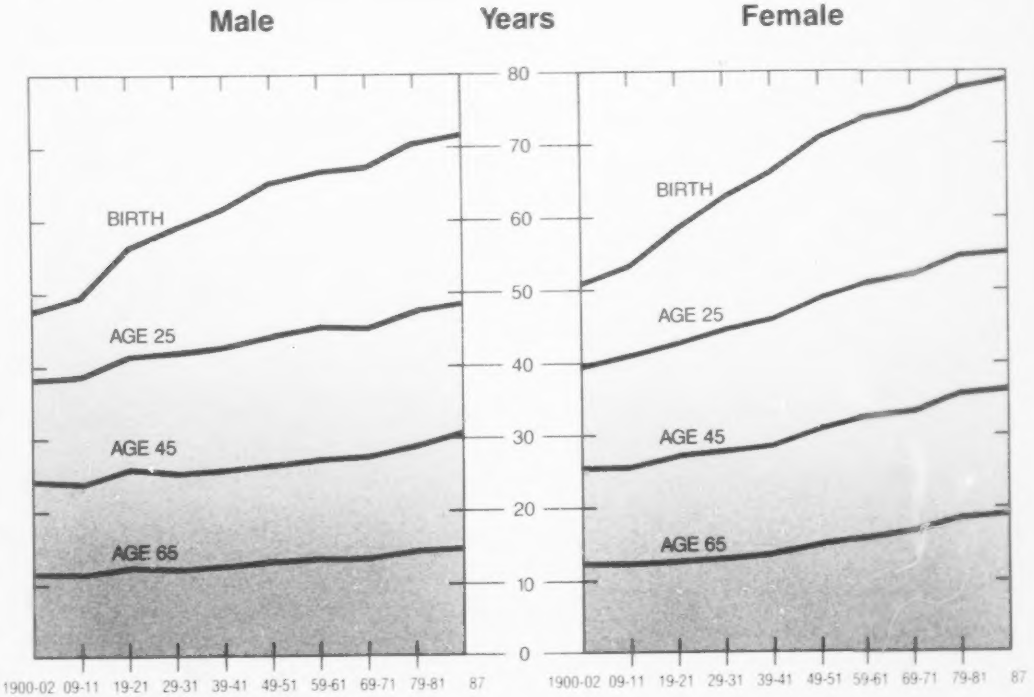
Life Expectancy by Race

Life expectancy and mortality rates by race and single years of age during 1985 (final data) are presented in Table 2. As may be observed, expectation of life at birth was considerably greater for whites than for persons of all other races. On the average, newborn white boys could expect to live 4.7 years longer than their nonwhite counterparts. Among girls, the disparity in favor of whites was 3.7 years. However, an encouraging observation, discussed in the Jul–Sep '87 *SB*,

Women continue to experience a significant longevity advantage over men is that the gap in average future lifetime between the race groups has gradually narrowed, although there have been instances of slight setbacks.

Women continue to experience a significant longevity advantage over men. According to the 1985 life tables, the sex differential among infants was 6.8 years for whites and 7.8 years for babies of all other races. At age 25, white women could expect to outlive white men by 6.2 years, with the corresponding figure among nonwhites being 7.1 years. With advance in age, the longevity differential between the sexes diminished but was still considerable. For example, at age 45 the disparity among whites was 5.5 years and at age 65 it was still 4.1 years. Among persons of all other races, the longevity advantage of women was 5.7 years at age 45 and 3.6 years at age 65.

Expectation of Life at Selected Ages
United States, 1900–02 to 1987



Source: 1900-02 to 1979-81, National Center for Health Statistics.
1987 data from Metropolitan Life Insurance Company.

Table 2—Expectation of Life and Mortality Rates at Single Years of Age by Race and Sex, United States, 1985

	Expectation of Life (in Years)					Mortality Rate per 1,000				
	Total Persons	White		All Other		Total Persons	White		All Other	
Age		Male	Female	Male	Female		Male	Female	Male	Female
0	74.7	71.9	78.7	67.2	75.0	10.7	10.6	8.0	17.3	14.4
1	74.5	71.6	78.4	67.4	75.1	.7	.7	.5	1.1	.8
2	73.6	70.7	77.4	66.5	74.1	.5	.6	.4	.9	.7
3	72.6	69.7	76.5	65.5	73.2	.4	.4	.3	.7	.6
4	71.7	68.7	75.5	64.6	72.2	.4	.4	.3	.6	.5
5	70.7	67.8	74.5	63.6	71.2	.3	.3	.2	.5	.4
6	69.7	66.8	73.5	62.6	70.3	.3	.3	.2	.4	.3
7	68.7	65.8	72.5	61.7	69.3	.3	.3	.2	.4	.3
8	67.7	64.8	71.5	60.7	68.3	.2	.2	.2	.3	.3
9	66.8	63.8	70.6	59.7	67.3	.2	.2	.2	.3	.2
10	65.8	62.9	69.6	58.7	66.3	.2	.2	.1	.3	.2
11	64.8	61.9	68.6	57.7	65.4	.2	.2	.2	.3	.2
12	63.8	60.9	67.6	56.8	64.4	.2	.3	.2	.3	.2
13	62.8	59.9	66.6	55.8	63.4	.3	.4	.2	.5	.3
14	61.8	58.9	65.6	54.8	62.4	.5	.6	.3	.6	.3
15	60.9	58.0	64.6	53.8	61.4	.6	.8	.4	.8	.3
16	59.9	57.0	63.7	52.9	60.4	.7	1.0	.4	1.0	.4
17	58.9	56.1	62.7	51.9	59.5	.8	1.2	.5	1.2	.5
18	58.0	55.1	61.7	51.0	58.5	.9	1.3	.5	1.4	.5
19	57.0	54.2	60.7	50.1	57.5	1.0	1.4	.5	1.6	.5
20	56.1	53.3	59.8	49.1	56.5	1.0	1.5	.5	1.8	.6
21	55.1	52.3	58.8	48.2	55.6	1.1	1.6	.5	2.0	.6
22	54.2	51.4	57.8	47.3	54.6	1.1	1.6	.5	2.2	.7
23	53.3	50.5	56.9	46.4	53.7	1.1	1.6	.5	2.3	.7
24	52.3	49.6	55.9	45.5	52.7	1.1	1.6	.5	2.3	.8
25	51.4	48.7	54.9	44.6	51.7	1.1	1.5	.5	2.4	.9
26	50.4	47.7	53.9	43.7	50.8	1.1	1.5	.5	2.4	.9
27	49.5	46.8	53.0	42.8	49.8	1.1	1.5	.5	2.5	1.0
28	48.5	45.9	52.0	42.0	48.9	1.2	1.5	.5	2.7	1.1
29	47.6	44.9	51.0	41.1	47.9	1.2	1.5	.6	2.9	1.2
30	46.7	44.0	50.1	40.2	47.0	1.2	1.6	.6	3.1	1.3
31	45.7	43.1	49.1	39.3	46.0	1.3	1.6	.6	3.3	1.4
32	44.8	42.2	48.1	38.4	45.1	1.3	1.6	.7	3.5	1.5
33	43.8	41.2	47.1	37.6	44.2	1.4	1.7	.7	3.7	1.5
34	42.9	40.3	46.2	36.7	43.2	1.5	1.7	.8	3.8	1.6
35	42.0	39.4	45.2	35.8	42.3	1.5	1.8	.8	4.0	1.7
36	41.0	38.4	44.3	35.0	41.4	1.6	1.9	.9	4.3	1.8
37	40.1	37.5	43.3	34.1	40.4	1.7	2.0	1.0	4.5	1.9
38	39.2	36.6	42.3	33.3	39.5	1.8	2.2	1.0	4.8	2.1
39	38.2	35.7	41.4	32.4	38.6	2.0	2.3	1.1	5.1	2.3
40	37.3	34.7	40.4	31.6	37.7	2.1	2.5	1.3	5.5	2.5
41	36.4	33.8	39.5	30.8	36.8	2.3	2.7	1.4	5.9	2.7
42	35.5	32.9	38.5	30.0	35.9	2.5	2.9	1.5	6.3	2.9
43	34.5	32.0	37.6	29.1	35.0	2.7	3.1	1.7	6.7	3.2
44	33.6	31.1	36.6	28.3	34.1	3.0	3.4	1.9	7.2	3.5
45	32.7	30.2	35.7	27.5	33.2	3.3	3.7	2.1	7.6	3.8
46	31.8	29.3	34.8	26.7	32.3	3.6	4.1	2.3	8.1	4.1
47	31.0	28.4	33.9	26.0	31.5	3.9	4.5	2.6	8.7	4.5
48	30.1	27.6	32.9	25.2	30.6	4.3	5.0	2.8	9.4	4.9
49	29.2	26.7	32.0	24.4	29.8	4.8	5.6	3.1	10.3	5.3
50	28.3	25.8	31.1	23.7	28.9	5.3	6.2	3.5	11.2	5.8
51	27.5	25.0	30.2	22.9	28.1	5.8	6.8	3.8	12.1	6.4
52	26.6	24.2	29.4	22.2	27.3	6.4	7.6	4.2	13.1	7.0
53	25.8	23.3	28.5	21.5	26.4	7.0	8.4	4.6	14.1	7.6
54	25.0	22.5	27.6	20.8	25.6	7.7	9.3	5.1	15.2	8.3
55	24.2	21.7	26.7	20.1	24.9	8.4	10.4	5.5	16.3	9.1
56	23.4	21.0	25.9	19.4	24.1	9.2	11.4	6.0	17.5	9.9
57	22.6	20.2	25.0	18.8	23.3	10.1	12.6	6.6	18.8	10.8
58	21.8	19.5	24.2	18.1	22.6	11.0	13.8	7.3	20.4	11.7
59	21.1	18.7	23.4	17.5	21.8	12.0	15.1	8.0	22.2	12.7
60	20.3	18.0	22.6	16.9	21.1	13.1	16.5	8.8	24.2	13.8
61	19.6	17.3	21.8	16.3	20.4	14.3	18.0	9.7	26.2	15.0
62	18.8	16.6	21.0	15.7	19.7	15.5	19.6	10.5	28.1	16.1
63	18.1	15.9	20.2	15.1	19.0	16.7	21.2	11.5	29.7	17.1
64	17.4	15.3	19.4	14.6	18.3	18.0	23.0	12.4	31.2	18.0
65	16.7	14.6	18.7	14.0	17.6	19.4	24.9	13.5	32.5	18.8
66	16.1	14.0	17.9	13.5	17.0	20.9	26.9	14.6	34.0	19.8
67	15.4	13.3	17.2	13.0	16.3	22.6	29.3	15.9	36.0	21.2
68	14.7	12.7	16.4	12.4	15.7	24.6	32.0	17.4	38.7	23.0
69	14.1	12.1	15.7	11.9	15.0	26.8	35.1	19.0	42.1	25.2
70	13.5	11.6	15.0	11.4	14.4	29.3	38.5	20.8	45.9	27.7
71	12.9	11.0	14.3	10.9	13.8	31.9	42.2	22.7	49.8	30.4
72	12.3	10.5	13.6	10.5	13.2	34.7	46.0	24.9	53.6	32.8
73	11.7	9.9	13.0	10.0	12.6	37.6	50.0	27.3	56.7	35.1
74	11.1	9.4	12.3	9.6	12.1	40.7	54.3	29.9	59.5	37.1
75	10.6	9.0	11.7	9.2	11.5	44.0	58.9	32.8	62.2	39.3
76	10.1	8.5	11.1	8.8	11.0	47.6	63.9	36.1	65.4	41.8
77	9.5	8.0	10.5	8.3	10.4	51.6	69.4	39.7	69.3	45.0
78	9.0	7.6	9.9	7.9	9.9	56.2	75.4	43.8	74.4	49.0
79	8.5	7.2	9.3	7.5	9.4	61.3	82.0	48.4	80.7	54.0
80	8.1	6.8	8.7	7.2	8.9	67.0	89.3	53.6	88.4	59.9
81	7.6	6.4	8.2	6.8	8.4	73.5	97.2	59.6	97.6	66.9
82	7.2	6.0	7.7	6.5	8.0	80.9	105.8	66.7	108.2	75.1
83	6.7	5.7	7.2	6.2	7.6	89.3	115.0	74.9	120.5	84.6
84	6.4	5.4	6.8	6.0	7.3	99.0	124.7	84.9	134.3	95.9
85	6.0	5.1	6.4	5.9	7.0					

Source: National Center for Health Statistics.

An analysis of the expectation of life values among men reveals that longevity was more favorable for whites until age 71; thereafter, nonwhite men could expect to live as long or longer. Among women, whites recorded higher expectation of life values until age 77; at age 78 there was no difference, but from that point on, nonwhites recorded higher longevity.

The right hand section of Table 2 shows detailed mortality rates for each race and sex group. Since the expectation of life figures (in the left hand section) are based on these mortality rates, it follows that the mortality rates for whites should be lower than for nonwhites. In fact, this was the case except for a few instances at the relatively young ages and at ages 77 through 80 for men.

Mortality rates were less than one per 1,000 population at ages 1-36 among white women and at ages 1-26 among women of all other races. Death rates of this magnitude were only experienced for young males aged 1-15 among whites and at ages 2-15 for nonwhites. Death rates remained below five per 1,000 through age 47 for white men and age 53 for white women; among nonwhites rates of this low level only prevailed through age 38 for men and age 48 for women.

Quality of Life Dilemmas

As life expectancy in the United States slowly increases, will there be comparable gains in older Americans' quality of life? The eventual answer will likely have social and financial ramifications. If, for instance, greater disability and even more out-of-pocket medical care costs fill those added years, new dilemmas will surely occur for the elderly, their families, as well as for business and government. As the *Bulletin* has emphasized in recent issues, these problems are so potentially nettlesome that they require immediate attention by virtually everyone nearing retirement. Periodic reviews of retirement plans' financial soundness should be mandatory instead of optional. Not to do so might well seriously jeopardize one's enjoyment of those added years of life.

Periodic reviews of retirement plans' financial soundness should be mandatory instead of optional.

References

"New high for expectation of life." *Statistical Bulletin*. 68(3) 8-9. 1987

Faber. J.F. Life Tables for the United States 1900-2050. Social Security Administration. Office of the Actuary. Actuarial Study No. 87 September 1982

U.S. Bureau of the Census. Current Population Reports. Series P-25. No. 952. "Projections of the Population of the United States, by Age, Sex, and Race. 1983 to 2080." Washington, D.C., 1984

Koop. C.E. *Surgeon General's Report on Acquired Immune Deficiency Syndrome*. p. 6. U.S. Public Health Service. U.S. Department of Health and Human Services. Oct. 1986

"New high for expectation of life." *Statistical Bulletin*. 68(3) 11. 1987

"Older Americans' health." *Statistical Bulletin*. 69(2) 10-16. 1988

Ibid. p. 17

"Trends in medical care costs." p. 2-8. Vatter, R.H. "The medical care cost dilemma." p. 9. *Statistical Bulletin*. 69(1) 1988

"Profile of centenarians." p. 2-7 Spencer, G. "Dramatic growth of centenarian population." p. 8-9 *Statistical Bulletin*. 68(1) 1987

"Projections of population growth at the older ages." p. 8-12. Davis, K. "The medical care challenge of an aging population." p. 13. *Statistical Bulletin*. 65(2) 1984

Capsule Briefs

are timely literature selections with broad reader interest

Life Expectancy and Fitness Linked by Medical Underwriter

When a life insurance medical underwriter explains that fitness increases one's life expectancy, it is time to listen. This "Mortality Abstract" cited the long-term studies of Harvard alumni conducted by Dr. Ralph Paffenbarger. The abstract comments, "The evidence is convincing that a sedentary lifestyle is associated with a relatively high level of mortality at any age in this rather large group [16,936—Ed.] of college alumni ... (their mortality rates) are much lower than the 1969-71 U.S. rates for white males at corresponding ... ages." We leave you with a question. Can you remember where you left your walking shoes? (Singer, R.B., **Journal of Insurance Medicine**, 19:15-18, 1987.) □

"Health Risk Appraisal" Under Scrutiny

Have you ever taken a "Health Risk Appraisal" (HRA) test? HRAs are, of course, the cornerstones of much current work in health promotion to identify, evaluate and write personal prescriptions for risk factors. In this cited issue several noted public health scientists examine HRAs to determine their validity, effectiveness and reliability. Virtually everyone should read the volume, especially those who consider relying on HRA results for personal behavior change or managers who want to recommend that an organization use one. Don't miss the five "reactor" panelists' comments at the end. Caveat emptor. (**Health Services Research**, Vol. 22, No. 4, October 1987, entire issue.) □

The Joy of Sex?

Future historians who want to understand the importance of sex in 20th century America may be assisted by these two guidelines from the Centers for Disease Control. They highlight the dark side of the American sexual revolution not often mentioned in polite society. The truth is that sexually transmitted diseases (STDs) as a group, including gonorrhea, chlamydia, cervix and penile cancers, AIDS and congenital syphilis, are presently major public health problems in the United States and Western Europe. Fortunately, there are control measures. ("Guidelines for the Prevention and Control of Congenital Syphilis," **Morbidity and Mortality Weekly Report**, Vol. 37, S-1, January 15, 1988; "Guidelines for Effective School Health Education to Prevent the Spread of AIDS," idem., Vol. 37, S-2, January 29, 1988.) □

Sterilization: The New Birth Control Norm

In just two decades surgical sterilization has been transformed into the primary means of contraception in America. In the mid-1960s a majority of couples disapproved of sterilization, whereas by 1982, 41 percent of couples chose sterilization as their contraceptive. Currently, almost 25 percent of all couples choose to be sterilized within the first year after they have had the number of children they desire. Recent experience would imply that 80 percent will eventually use contraceptive sterilization. (Bumpass, L.L., **Population Studies**, 41:347-363, 1987.) □

Medicine in the 19th Century

Even someone who disliked history as a student would find this article intriguing. It is based on the letters Dr. George Martin Trowbridge wrote to his wife from 1863-1865 when he was a member of General Sherman's Army. He was a sensitive observer as he described such things as sick calls, watching northern troops raiding farms, battle scenes, the long marches, the devastation of Georgia, and finally, "mustering-out." It is an unusual and often thoughtful glimpse of the tragedy that was the Civil War. (Davenport, H.W., **Bulletin of the New York Academy of Medicine**, 63:844-882, 1987.) ... The roles that physicians played in the formation of the American life insurance industry in the 19th century are mostly unknown. Their importance, especially in life underwriting, is interestingly described, with some excellent excerpts from texts and articles of the time. The article would seem required reading for anyone wanting information about the antecedents of the modern life insurance industry. (Haller, J.S., **New York State Journal of Medicine**, 87:546-552, 1987.) □

Whither the Cigarette Advertisement?

There are estimated to be more than 45 million smokers in the United States, 24 years after the first Surgeon General's report on smoking and health. But there may be some good news, too. A growing list of magazines have explicit policies *not* to run tobacco or cigarette advertisements; there are 82 at this time. From a public health perspective, they should be heralded. A few of the more familiar names include: *The New Yorker, Good Housekeeping, Parents, Reader's Digest, Saturday Evening Post, Scientific American, Yankee,* and *Zoo News.* (**American Medical News**, January 22-29, 1988.) □

Births by Cesarean: Cost Changes, 1982-83 to 1986

Cesarean birth rates climbed to an all-time high in the United States in 1986—24.1 per 100 U.S. deliveries. This rate was 6.2 percent higher than that registered in 1985, an almost 50 percent increase over the 1980 rate and more than 5 times the rate of 4.5 in 1965. The U.S. rates have increased more sharply than those in other developed countries and have grown fairly uniformly among all age groups, marital statuses, in every type and size of hospital, for all forms of insurance coverage and in all regions of the country. Some 906,000 cesareans were performed in 1986, ranking them second only to biopsies among the 10 most commonly performed surgical procedures in U.S., nonfederal short-stay hospitals.

Almost one in every four U.S. births in 1986 was by cesarean section.

Cesarean birth rates continue to escalate despite the fact that these deliveries cost almost twice a normal birth.* The rising incidence† is occurring even as the American College of Obstetricians and Gynecologists (ACOG) encourages the reduction of cesareans by liberalizing guidelines for the management of deliveries subsequent to an original cesarean, and attempts are made by the ACOG and others to increase a woman's awareness of her choices during pregnancy and delivery.

Repeat cesareans continue to account for 34 percent of cesarean births.

The rate of repeat cesareans also continues to rise. Currently, more than one-third (34.3 percent) of all cesarean births in this country are repeats; in 1984, 36 percent of repeats were planned, up from 31 percent in 1978. These discouraging statistics are countered by slow, but steady, increases in the proportion of women who have had a successful vaginal birth after a cesarean (VBAC). While still fairly infrequent, VBAC rates have increased from 3.4 percent in 1980 to 4.8 percent in 1982, 5.7 percent in 1984 and 8.5 percent in 1986. This trend is encouraging but falls far short of the accepted estimates that "VBAC rates of 39 to 89 percent ..." are safely attainable for certain selected women.

Variation in Rates

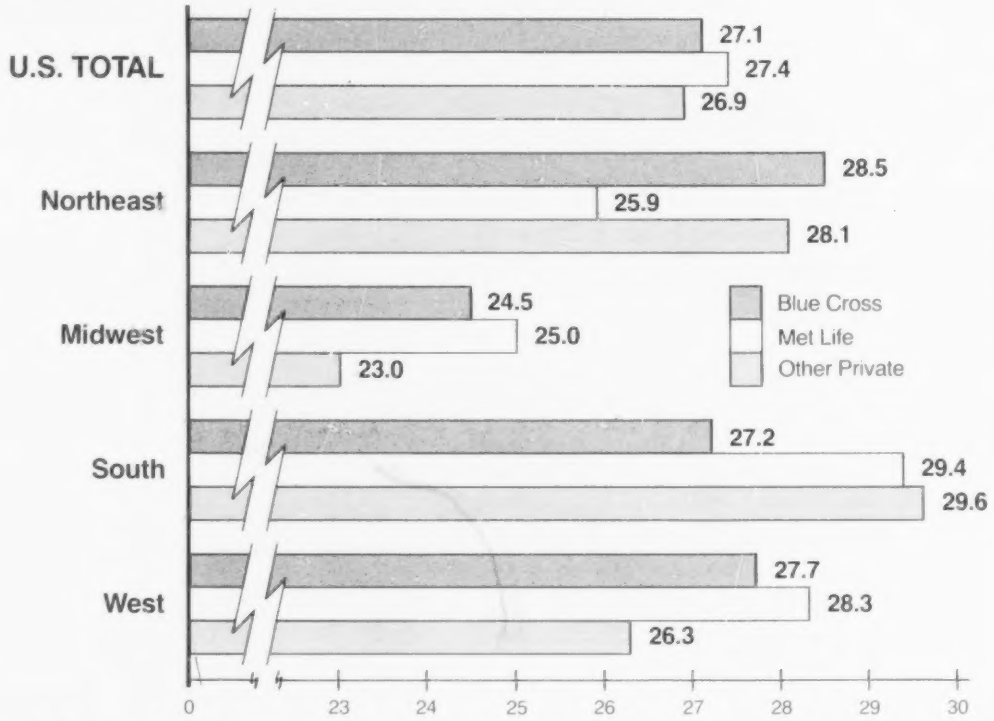
Rates of cesareans vary by geographic region. They are influenced by the prevailing medical practices of the area, the demographic and socioeconomic characteristics of the patients, patient choice and, as some assert, the medico-legal climate. The reasons for the variations and the "forces driving the rates are not well understood" but continue to be debated. As the rates fluctuate, so do the charges associated with this birth procedure. Therefore, Metropolitan Life epidemiologists and statisticians studied the costs associated with a cesarean childbirth in 1986 and compared them to previously published charges for the period January 1, 1982-June 30, 1983. The data were supplied by Corporate Health Strategies, Inc., which linked hospital and physician data for 9,676

---

*For 1986 deliveries insured by Metropolitan, a normal vaginal birth cost $2,900 versus the $5,270 for a cesarean. This difference and regional variations in rates and costs will be reported in a forthcoming issue of the *Bulletin*.

†Reasons for the increases remain controversial and were outlined in the Jul-Sep 1986 issue of the *Statistical Bulletin*.

Figure A — Cesarean Section Rates* by Region and Expected Source of Payment, United States, 1986



*Per 100 deliveries.
Source: Placek, P.S. and Taffel, S.M. Unpublished data from the National Center for Health Statistics and reference No. 14
Rates computed by Health and Safety Education Division, Metropolitan Life Insurance Company

cesarean births in 1986 among employees and dependents insured under Metropolitan Life group health contracts.

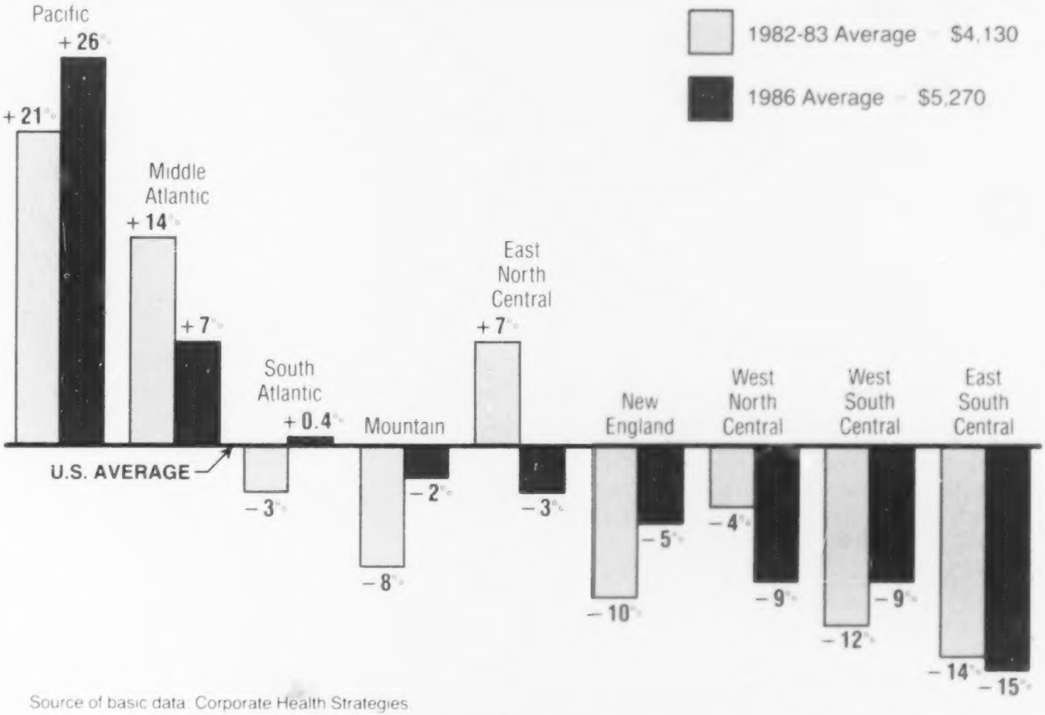
Average medical/surgical and hospital charges are presented by state and geographic area of occurrence. The distribution of the proportion of births by cesarean was similar to that reported for other private insurance carriers. For both Metropolitan Life and other private insurers, cesarean rates were highest in the South, 29.4 and 29.6, respectively, and lowest in the Midwest, 25.0 and 23.0.[14] An overall rate of 27.4 and 26.9 was reported for 1986, respectively, for these carriers (Figure A).

Cost Variation by Region/State

Average charges for a cesarean birth in 1986 totaled $5,270, with marked variation among regions (Figure B). The Pacific area average charge was more than $6,600—26.4 percent higher than the U.S. and 1½ times the East South Central regional charge. The Middle

> Average cost of a cesarean in 1986 was $5,270; average cost of a vaginal birth was $2,900.

Figure B — Percent Difference in Average Total Costs of a Cesarean Birth by Geographic Division United States, 1982–83 and 1986



Source of basic data: Corporate Health Strategies.

Atlantic and the South Atlantic regions were the only other areas with charges exceeding the national average, but to a much lesser degree, 6.5 and 0.4 percent, respectively. The lowest average charge (less than $5,000 in the East South Central area) was 15 percent lower than the U.S. average.

The Pacific and Middle Atlantic area costs remained ranked first and second, respectively, in both 1982-83 and 1986. The notable exception to this relative stability of the ranking of charges was that in the East North Central area. The average charge in this part of the country dropped from being 7 percent *above* the norm in 1982-83 to 3 percent *below* the U.S. total in 1986.

Between states, total charges differed by as much as 90 percent (Table 1). The District of Columbia and Nevada led in these costs, each with cesarean charges 33 percent above the U.S. total. These high costs were based on 44 and 25 cases, however, and thus should be viewed with some caution. California followed closely with total charges in excess of $6,900, or 32 percent above the average. Florida, Illinois, Alaska and New York were the only other states with charges more than 10 percent above the U.S. average.

The lowest average cesarean charge was $3,680 in Montana for 13 cases, a charge 30 percent below the average. North Carolina and South Dakota each recorded average charges 23 percent below the total. These low charges were followed by those in Virginia, Minnesota, Maine, Wyoming, Iowa and South Carolina where the costs were between 21 and 22 percent lower than average.

Physician and Hospital Charges

On the average, 61 percent of the insurance charges for a cesarean birth were attributable to hospital costs (room and board plus ancillary fees which totaled $3,240). By states, these proportions ranged from 72 percent in South Dakota ($2,920) to 48 percent in New York ($2,880). Ancillary charges (i.e., operating room, laboratory, X-ray, pharmacy, blood bank fees, etc.) averaged $2,140—two-thirds of the total hospital bill. These charges ranged from 78 percent in Mississippi to almost half the hospital bill in New York. Ancillary fees were the highest in Nevada, 68 percent above the average; California, the District of Columbia, Illinois, Florida, Kansas and Georgia all had fees more than 20 percent above the average.

Physician fees averaged $2,030, but varied extensively both between states and geographic regions. The doctors' bills in New York were the highest and averaged 53 percent above the norm. The Pacific area led the country with charges 34 percent above average. This regional charge reflects the fees in California, which were the second highest in the country. Florida and the District of Columbia followed with charges 35 and 22 percent above the norm. The lowest regional cesarean charge was found in the East South Central states, where the doctors' bills averaged $1,470—a fee 28 percent lower than the total. The lowest physician fees were reported in South Dakota, $1,150, 43 percent below the U.S. average and 63 percent below the New York doctors' fees.

Wide between-state variation in the length of hospital stay was reported for a typical cesarean section in 1986. While the U.S. average hospital stay was 5.15 days, South Dakota, New Jersey and the District of Columbia each reported more than six days of hospitalization for a cesarean. The two shortest hospital stays were recorded in Montana (3.92 days) and New Mexico (3.93 days). It is interesting that California recorded among the highest component and total charges, ranging between 26 and 40 percent higher than the U.S. average, while also registering average length of stays of 4.42 days, 14 percent *below* the average.

> Average total charges for a cesarean birth increased 28 percent between 1982-83 and 1986, with physician fees increasing the most—close to 60 percent.

Trends in Charges Between 1982-83 and 1986

Total charges for a cesarean in 1986 were 28 percent higher than those in 1982-83, $5,270 versus $4,130. For the country as a whole, the charges increased in each billing category except room and board where these costs reflected a drop in hospital stay from 5.99 days in 1982-83 to 5.15 in 1986 (Table 2). Relative increases in total costs of 52 percent or more were registered in Alaska (with only 10 cases in 1986), Arizona, Utah, Vermont and Connecticut. The average total fees in Nevada, Ohio, Nebraska and Virginia increased the least (less than 10 percent since 1982-83).

Physician charges increased the most—59.8 percent—rising from $1,270 to $2,030. In addition, these 1986 doctors' fees were 39 percent of the total bill versus 31 percent earlier. Physician fees increased by more than 50 percent in eight out of the nine U.S. areas. They rose the most in the Middle Atlantic states (74 percent) with New York and New Jersey doctors, respectively, charging

Table 1 — Average Charges for a Typical* Cesarean Birth Among Women Insured by Metropolitan Life, 1986

Geographic Area	Average Costs ($)						Percentage	
	Total Hospital & Physician	Hospital Charges			Physician Charge	Average Length of Stay	Hospital of Total	Ancillary of Hospital
		Total	Room & Board	Ancillary				
United States	5,270	3,240	1,100	2,140	2,030	5.15	61	66
New England	4,990	3,070	1,260	1,810	1,920	5.60	62	59
Maine†	4,130	2,690	1,070	1,620	1,440	5.36	65	60
New Hampshire	4,630	2,950	1,140	1,810	1,680	5.49	64	61
Vermont†	4,740	3,340	1,440	1,900	1,400	5.97	70	57
Massachusetts	5,100	3,110	1,280	1,830	1,990	5.65	61	59
Rhode Island†	4,300	2,540	1,200	1,340	1,760	5.39	59	53
Connecticut	5,480	3,280	1,340	1,940	2,200	5.62	60	59
Middle Atlantic	5,610	3,070	1,410	1,660	2,540	5.88	55	54
New York	5,990	2,880	1,450	1,430	3,110	5.85	48	50
New Jersey	5,310	3,000	1,340	1,660	2,310	6.23	56	55
Pennsylvania	5,280	3,400	1,400	2,000	1,880	5.63	64	59
East North Central	5,090	3,330	1,220	2,110	1,760	5.35	65	63
Ohio	4,450	2,800	1,070	1,730	1,650	4.87	63	62
Indiana	4,360	2,810	950	1,860	1,550	5.08	64	66
Illinois	6,200	4,150	1,520	2,630	2,050	5.96	67	63
Michigan	5,390	3,810	1,520	2,290	1,580	5.45	71	60
Wisconsin	4,650	2,970	900	2,070	1,680	5.45	64	70
West North Central	4,790	3,220	1,050	2,170	1,570	5.26	67	67
Minnesota	4,110	2,710	950	1,760	1,400	4.76	66	65
Iowa	4,150	2,770	1,030	1,740	1,380	5.38	67	63
Missouri	5,150	3,450	1,140	2,310	1,700	5.58	67	67
North Dakota†	4,280	2,920	970	1,950	1,360	5.07	68	67
South Dakota†	4,070	2,920	1,090	1,830	1,150	6.60	72	63
Nebraska†	4,290	2,920	850	2,070	1,370	4.98	68	71
Kansas	5,280	3,590	970	2,620	1,690	4.52	68	73
South Atlantic	5,290	3,180	930	2,250	2,110	5.07	60	71
Delaware†	4,630	3,260	960	2,300	1,370	4.67	70	71
Maryland	4,730	2,490	1,010	1,480	2,240	4.81	53	59
District of Columbia†	7,010	4,540	1,880	2,660	2,470	6.05	65	59
Virginia	4,100	2,560	880	1,680	1,540	5.28	62	66
West Virginia†	4,650	3,000	920	2,080	1,650	5.28	65	69
North Carolina	4,070	2,610	770	1,840	1,460	5.46	64	70
South Carolina	4,180	2,810	790	2,020	1,370	5.03	67	72
Georgia	5,410	3,390	790	2,600	2,020	4.94	63	77
Florida	6,400	3,660	1,040	2,620	2,740	4.89	57	72
East South Central	4,480	3,010	820	2,190	1,470	5.08	67	73
Kentucky	4,350	2,850	1,060	1,790	1,500	5.20	66	63
Tennessee	4,350	2,980	760	2,220	1,370	4.94	69	74
Alabama	4,930	3,310	800	2,510	1,620	4.95	67	76
Mississippi	4,360	2,910	640	2,270	1,450	5.41	67	78
West South Central	4,800	2,920	870	2,050	1,880	5.02	61	70
Arkansas	4,480	3,040	710	2,330	1,440	4.88	68	77
Louisiana	5,160	3,290	850	2,440	1,870	5.13	64	74
Oklahoma	4,840	3,110	860	2,250	1,730	4.96	64	72
Texas	4,730	2,810	890	1,920	1,920	5.02	59	68
Mountain	5,160	3,300	1,060	2,240	1,860	4.67	64	68
Montana†	3,680	2,380	860	1,520	1,300	3.92	65	64
Idaho‡	‡	‡	‡	‡	‡	‡	‡	‡
Wyoming†	4,150	2,560	810	1,750	1,590	4.29	62	68
Colorado	5,340	3,440	1,190	2,250	1,900	4.90	64	65
New Mexico	4,510	2,720	790	1,930	1,790	3.93	60	71
Arizona	5,650	3,520	960	2,560	2,130	4.59	62	73
Utah†	4,460	2,940	1,110	1,830	1,520	5.12	66	62
Nevada†	7,010	4,790	1,200	3,590	2,220	5.00	68	75
Pacific	6,660	3,930	1,360	2,570	2,730	4.44	59	65
Washington	4,870	2,750	1,030	1,720	2,120	4.75	56	63
Oregon	4,830	3,090	1,170	1,920	1,740	4.47	64	62
California	6,940	4,090	1,400	2,690	2,850	4.42	59	66
Alaska†	6,110	3,990	1,430	2,560	2,120	4.40	65	64
Hawaii†	4,840	2,880	960	1,920	1,960	4.60	60	67

* "Typical" deliveries are exclusive of outliers according to DRG guidelines

† States with fewer than 50 cases, data may be subject to wide fluctuation

‡ Data not available

Source: Claims data from Metropolitan Life Insurance Company merged and edited by Corporate Health Strategies, Inc. Analysis and computations by Health and Safety Education Division, Metropolitan Life Insurance Company

75 and 74 percent higher fees in 1986 than in 1982-83. The smallest relative increase in physician fees was reported in the East South Central states where the average doctor's bill increased 49 percent. Washington State reported the largest relative increase in physician fees (91 percent) whereas these fees in Nevada, Delaware and Wyoming had increased the least (less than 33 percent).

Room and board charges decreased by 4.3 percent across the country but with rather wild between-state fluctuations. While costs decreased in the majority of the areas, four reported *increased* room and board fees in 1986. The Mountain area reported the largest relative *increase*—13 percent—and the Middle Atlantic reported the largest relative *decrease* in room and board charges (20 percent below). In three of the four areas with increased fees, e.g., New England, Mountain, and the Pacific, the larger fees were due to disproportionate increases by individual states within that region.

Malpractice Insurance

Medical malpractice insurance costs have received a great deal of media attention and some evidence suggests these costs are partly responsible for the increasing rates of cesareans. While the 1980 Consensus Conference concluded there was no direct evidence that fear of litigation led to the increased rates of cesarean sections and/or the practice of "preventive medicine," many others disagree. All agree, however, that the relationship between cesarean rates and medical malpractice costs needs to be monitored, scrutinized and publicized.

As with the charges data, medical malpractice costs vary widely by geographic area and have increased dramatically between 1983 and 1985. Based on a General Accounting Office (GAO) report, total physician malpractice costs have doubled, $1.7 billion in 1983 to $3.4 billion in 1985. According to the GAO, as of 1985, orthopedic surgeons, neurosurgeons and obstetricians/gynecologists (OB/GYN) paid the highest

Table 2—Percent Change in Cesarean Delivery Charges by State Among Women Insured by Metropolitan Life, 1982–83* to 1986

	Average Costs ($)				
	Total	Hospital Charges			
Geographic Area	Hospital & Physician	Total	Room & Board	Ancillary	Physician Charge
United States	**27.6**	13.3	4.3	25.1	59.8
New England	**34.1**	19.0	5.9	30.2	68.4
Maine†	**23.7**	8.9	9.3	8.7	65.5
New Hampshire	**40.7**	28.3	15.2	38.2	69.7
Vermont†	**51.4**	41.5	33.3	48.4	81.8
Massachusetts	**28.5**	9.5	1.5	18.8	76.1
Rhode Island†	**24.6**	9.5	.8	18.6	55.8
Connecticut	**51.0**	39.0	19.6	56.5	73.2
Middle Atlantic	**19.6**	5.0	19.9	12.9	74.0
New York	**13.2**	17.9	37.2	9.2	74.7
New Jersey	**28.9**	7.5	5.5	9.2	73.7
Pennsylvania	**22.5**	9.3	.7	16.3	56.7
East North Central	**14.9**	1.2	10.9	9.9	54.4
Ohio	**8.3**	7.9	15.7	2.3	54.2
Indiana	**14.4**	3.7	8.7	11.4	40.9
Illinois	**17.0**	3.5	9.0	12.4	58.9
Michigan	**25.6**	15.1	4.1	23.8	61.2
Wisconsin	**18.9**	8.8	21.1	30.2	42.4
West North Central	**21.3**	9.2	3.7	16.7	57.0
Minnesota	**24.5**	18.3	4.4	27.5	38.6
Iowa	**29.7**	21.0	10.8	27.9	51.6
Missouri	**19.5**	4.5	4.2	9.5	68.3
North Dakota†	**18.6**	12.3	1.0	18.9	34.7
South Dakota‡	‡	‡	‡	‡	‡
Nebraska†	**8.3**	1.0	15.8	6.7	35.6
Kansas	**30.4**	20.9	11.0	39.4	56.5
South Atlantic	**31.9**	16.5	5.1	28.6	64.8
Delaware†	**39.0**	42.4	9.4	87.0	31.7
Maryland	**20.7**	.8	12.2	8.8	58.9
District of Columbia†	**31.0**	22.4	6.2	37.1	50.6
Virginia	**7.3**	4.8	22.1	7.7	36.3
West Virginia†	**25.0**	13.6	1.1	21.6	52.8
North Carolina	**18.3**	5.7	14.4	17.2	50.5
South Carolina	**27.4**	19.6	2.5	31.2	47.3
Georgia	**49.0**	36.1	5.3	49.4	77.2
Florida	**37.6**	20.0	7.2	26.0	71.3
East South Central	**26.2**	17.6	1.2	26.6	48.5
Kentucky	**39.4**	34.4	9.3	55.7	50.0
Tennessee	**19.5**	11.2	7.3	19.4	42.7
Alabama	**19.1**	6.4	12.1	14.1	57.3
Mississippi	**38.4**	32.9	8.5	41.9	51.0
West South Central	**32.2**	20.7	3.6	29.7	55.4
Arkansas	**32.2**	27.7	1.4	38.7	42.6
Louisiana	**42.9**	33.2	14.9	41.0	[illegible]
Oklahoma	**26.7**	18.7	12.2	37.2	[illegible]
Texas	**30.3**	18.1	3.5	26.3	53.6
Mountain	**35.4**	26.4	12.8	34.1	55.0
Montana†	**27.3**	22.7	18.1	70.8	36.8
Idaho‡	‡	‡	‡	‡	‡
Wyoming†	**14.0**	6.2	5.2	6.7	29.3
Colorado	**27.4**	17.8	8.2	23.6	49.6
New Mexico	**36.7**	23.6	1.3	37.9	62.7
Arizona	**51.9**	41.9	12.9	57.1	71.8
Utah†	**51.7**	48.5	33.7	59.1	58.3
Nevada†	**8.5**	.2	.8	.6	32.1
Pacific	**33.5**	21.7	8.8	29.8	55.1
Washington	**48.9**	27.3	12.0	38.7	91.0
Oregon	**29.5**	13.2	9.3	15.7	74.0
California	**30.9**	19.9	6.9	28.1	50.8
Alaska†	**115.1**	138.9	142.4	137.0	81.2
Hawaii†	**47.6**	32.7	23.1	38.1	76.6

* Covers period January 1, 1982 to June 30, 1983

† See Table 1

‡ Data not available for comparison

Source: Table 1 and Ref. No. 13

Table 3 — Met Life Insured Births, Cesarean Rates, Geographic Ranking of 1986 Cesarean Charges and U.S. Ob/Gyn Malpractice Premiums, July 1, 1985

Geographic Area	1986 Metropolitan Insured Births*					1985 Malpractice Premiums†
	Total Birth		Cesarean Births as Percent of Total Births	Cesarean Charges Ranked High to Low		
	Number	Percent		Total	Physician	
United States	35,276	100.0	27.4			
New England	2,055	5.8	25.6	VI	IV	
Maine	163	.5	22.1	45	39	22,530
New Hampshire	302	.9	25.8	29	26	20,755
Vermont	110	.3	26.4	24	41	18,250
Massachusetts	700	2.0	28.4	18	14	12,928
Rhode Island	129	.4	27.9	39	21	23,781
Connecticut	651	1.8	22.7	9	8	32,901
Middle Atlantic	3,769	10.7	26.0	II	II	
New York	1,617	4.6	27.3	7	1	30,818
New Jersey	862	2.4	28.1	13	5	20,304
Pennsylvania	1,290	3.7	23.1	14	18	20,196
East North Central	7,080	20.1	25.3	V	VII	
Ohio	2,434	6.9	26.7	34	28	14,775
Indiana	862	2.4	23.8	35	33	11,380
Illinois	2,061	5.8	26.5	5	12	42,434
Michigan	682	1.9	26.0	11	32	19,931
Wisconsin	1,041	3.0	20.4	27	27	24,508
West North Central	2,595	7.4	24.2	VIII	VIII	
Minnesota	334	.9	20.1	46	42	11,808
Iowa	505	1.4	21.0	43	43	24,901
Missouri	1,145	3.2	26.6	17	24	32,480
North Dakota	61	.2	24.6	41	48	25,994
South Dakota	48	.1	10.4	48	50	21,220
Nebraska	192	.5	24.0	40	44	11,289
Kansas	310	.9	27.7	15	25	25,761
South Atlantic	6,758	19.2	30.0	III	III	
Delaware	120	.3	25.0	30	45	16,117
Maryland	578	1.6	29.8	25	6	42,434
D.C.	111	.3	39.6	1	4	43,833
Virginia	675	1.9	24.9	47	34	16,270
West Virginia	168	.5	25.6	28	29	25,897
North Carolina	1,376	3.9	25.9	49	37	16,904
South Carolina	408	1.2	28.4	42	46	6,522
Georgia	1,275	3.6	30.0	10	13	23,781
Florida	2,047	5.8	34.9	4	3	51,112
East South Central	2,028	5.7	28.5	IX	IX	
Kentucky	543	1.5	26.3	37	36	20,766
Tennessee	698	2.0	28.7	38	47	16,614
Alabama	436	1.2	31.4	19	30	17,652
Mississippi	351	1.0	27.9	36	38	14,014
West South Central	5,679	16.1	28.9	VII	V	
Arkansas	291	.8	27.8	32	40	9,922
Louisiana	870	2.5	30.0	16	19	11,310
Oklahoma	548	1.6	23.5	21	23	10,953
Texas	3,970	11.3	29.4	26	16	11,609
Mountain	1,520	4.3	24.3	IV	VI	
Montana	46	.1	28.3	50	49	11,540
Idaho	‡	‡	‡	‡	‡	24,043
Wyoming	105	.3	20.0	44	31	18,343
Colorado	643	1.8	24.9	12	17	18,136
New Mexico	204	.6	26.5	31	20	10,627
Arizona	243	.7	23.0	8	9	26,767
Utah	197	.6	20.8	33	35	13,376
Nevada	82	.2	30.5	2	7	22,592
Pacific	3,792	10.7	30.0	I	I	
Washington	304	.9	28.0	20	10	24,464
Oregon	214	.6	28.0	23	22	27,495
California	3,224	9.1	30.3	3	2	34,816
Alaska	29	.1	34.5	6	11	25,336
Hawaii	21	.1	23.8	22	15	37,652

* Corporate Health Strategies, Inc.; rates and computations by Health and Safety Education Division, Metropolitan Life Insurance Company

† Ref. No. 15, Appendix II, Table II-4

‡ Charge data not available — no cases

a. Both occurrence and claims-made policy forms offered by leading insurer

b. Premium is conditional upon pending state insurance department final approval

c. Because of multiple-rating territories for leading insurer, premiums shown are for territory with largest numbers of Ob/Gyns

malpractice premiums of all specialists. While these costs still represent a relatively small part of the physicians' total expenses (about 10 percent), they have increased more than the other expenses for all doctors. For OB/GYNs, however, these premiums are proportionately the highest (16 percent of total expenses), and between 1982 and 1984 increased the most—72 percent versus 45 percent for all physicians.

Between 1982 and 1984, malpractice premiums increased 72 percent among OB/GYNs in contrast to the 45 percent increase for all physicians.

In 1984, the latest year for which such data are available, the average OB/GYN premium was $18,800 in contrast to $8,400 for all doctors. The OB/GYN premiums were among the highest in all areas of the country but varied extensively within areas and between states (Table 3). As of July 1, 1985 there was a sevenfold difference between the Florida fee of $51,112, and the $7,000 paid in South Carolina. OB/GYN premiums were over $40,000 in Florida, the District of Columbia, Maryland and Illinois; premiums of less than $11,000 were paid in Oklahoma, New Mexico, Arkansas and South Carolina.

The malpractice data do not seem to support the contention that high malpractice premiums are directly correlated with high cesarean birth rates. Lower-than-average malpractice premiums were paid in 22 states—half of which were in the southern region of the country where cesarean rates have historically been high. There also appears to be no direct relationship between physician fees, proportion of Metropolitan-insured cesarean births and malpractice insurance premiums for any state other than Florida and the District of Columbia. These areas ranked first and second in malpractice premium rates, second and first in the proportion of Met Life births that were by cesarean, and third and fourth in physician fees. With the exception of California, where malpractice premiums were sixth highest, cesarean rates, also sixth, and physician fees second, there seem to be random fluctuations in these relationships.

Cesarean Controversy Continues

Rising rates of cesarean sections, escalating costs of medical and surgical care, increasing insurance premiums and the widening geographic disparities in average total and component health care costs are issues that continue to draw much study, media attention and controversy. While a cesarean delivery is safer now than ever before, this surgery is not totally free of medical risks. It is more expensive than a normal vaginal delivery, general maternal mortality rates are higher, and cesareans can be psychologically traumatic to the mother, who may experience slow or delayed "bonding" with her infant. It is clear that much more public health education is needed in order to help reduce at least the *rate of increase* in cesarean sections, if not the rate itself. Hospital reviews and wider implementation of evaluations of the necessity for primary cesareans would also beneficially influence the rates. Whether an optimum rate exists, or can be defined, remains a major research question. Nonetheless, it seems prudent to advocate and publicize the options available for women who have delivered previously by cesarean. Trial labor can and should be encouraged and offered to many women eligible for a vaginal birth following a cesarean.

References

Placek, PJ., Taffel, S.M., Moien, M., "1986 C-sections rise, VBAC inch upward." *Am J Pub Hlth.* 78(5):562-563, 1988.

Taffel, S.M., Placek, PJ., Liss, TL. "Trends in the United States cesarean section rate and reasons for the 1980-85 rise." *Am J Pub Hlth.* 77(8):955-959, 1987.

Politser, P., Cunico, E., *Socio-Economic Factbook for Surgery 1988.* Chicago, Illinois: American College of Surgeons, 1988.

National Center for Health Statistics. 1987. *1986 Summary: National Hospital Discharge Survey. Advance Data from Vital and Health Statistics* No. 145, Pub. No. (PHS)87-1250. Hyattsville, Md. Public Health Service, 1987.

Placek, PJ., "Cesarean rate still rising." *Statistical Bulletin.* 67(3):9-10, 1986.

Klein, L., *New Guidelines to Reduce Repeat Cesareans.* Statement for VBAC News Conference News Release, the American College of Obstetricians and Gynecologists, January 25, 1985.

Gleicher, N. "Cesarean section rates in the United States. The short-term failure of the National Consensus Development Conference, 1980." *JAMA* 252:3273-3276, 1984.

Anderson, G.M., Lomas, J., "Determinants of the increasing cesarean birth rate." *N Eng J Med* 311:887-892, 1984.

Notzon, FC., Placek, PJ., Taffel, S.M., "Comparisons of national cesarean-section rates." *N Eng J Med* 316(7):386-389, 1987.

Shiono, PH., Fielden, J.G., McNellis, D., Rhoads, G.G., Pearse, W.H., "Recent trends in cesarean birth and trial of labor rates in the United States." *JAMA.* 257(4):494-497, 1987.

Placek, PJ., Taffel, S.M., "Vaginal birth after cesarean (VBAC) in the 1980s." *Am J Pub Hlth.* 78(5):512-515, 1988.

Harris, B.A., Jr., Reiner, I.J., Iffy, L., "Cesarean rates in the United States." *JAMA.* 253(22):3247-3248, 1985.

"Costs of cesarean section: Regional variations." *Statistical Bulletin.* 67(3):2-8, 1986.

Taffel, S.M., Unpublished data. National Center for Health Statistics, March 1988.

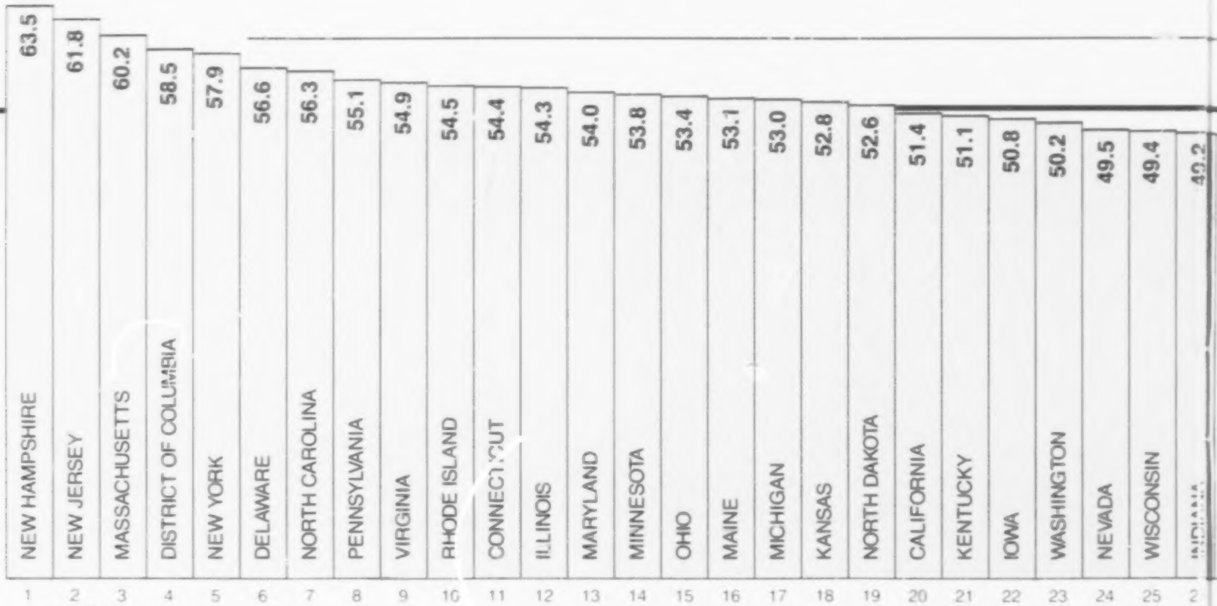
Human Resources Division, United States General Accounting Office. *Medical Malpractice: Insurance Costs Increased but Varied Among Physicians and Hospitals.* (GAO/HRD-86-112) Washington, D.C.: U.S. General Accounting Office, 1986.

Trends and Regional Differences in Breast Cancer Mortality

Cancer, the second leading cause of death in the United States, will take an estimated 494,000 lives across the country in 1988. Of these deaths, 47 percent will be among women for whom lung and breast cancer will be the predominant sites of the malignancies. For more than 40 years, breast cancer has been the leading cause of cancer deaths among U.S. women; in the early to mid-1980s, however, lung cancer deaths surpassed these rates for the first time. In 1988 lung cancer will account for an estimated 19.9 percent of female cancer deaths, breast cancer for 18.2 percent of the total.

Lung cancer deaths are expected to continue increasing as women who began smoking in the 1940s grow older. Some experts fear that the heretofore relatively stable breast cancer mortality rates may also begin to increase. This fear is based on a recent report from the National Cancer Institute (NCI) that reported a 5 percent increase between 1984 and 1985 in breast cancer death rates among white women under 50—the first such increase in more than a decade. Since both these cancers are thought to be associated with environmental factors, and thus subject to preventive measures, any increase in these rates represents a public health failure.

Black women consistently have had higher breast cancer mortality rates than white women, with black rates increasing by around 1 percent annually since 1973. In 1985 the breast cancer death rate for black women was 25.3 per 100,000 population and 23.3 for white women. The differences between the races in breast cancer mortality may be diminishing, however, if the NCI report of increasing rates among white women persists along with the slower rates of increase among blacks.



Source: Table 1

Currently, however, an estimated one in every 10 women will develop breast cancer during her lifetime. Thus, the possible increasing rates among all women is cause for great and continued concern. The following analysis addresses this issue by comparing breast cancer mortality rates for all women across the United States in 1985 with those for the years 1979, 1980 and 1981, combined.

This report is the first in a series of 1985 U.S. mortality analyses by region and state using the latest unpublished data from the National Center for Health Statistics and based on the 1985 population estimates. Breast cancer rates include those assigned to International Classification of Diseases, Ninth Revision, Code 175. Mortality rates for all women are shown per 100,000 population in 10-year age groupings between 35 and 74 and for ages 35-74, combined. The combined rates have been age-adjusted to control for differences in the age composition of state populations.

Breast Cancer Rates by Region, 1985

The 1985 breast cancer mortality rates among women 35-74 varied extensively between regions of the United States (Table 1). There was a 33 percent difference between the highest rate reported in the Middle Atlantic region (57.8) and the lowest rate in the West South Central area (43.5). The second highest rate was registered in the New England area (11 percent above the

> By region, there was a 33 percent difference between the highest and lowest rates of breast cancer mortality.

Age-Adjusted Death Rates for Breast Cancer, Women 35–74, United States, 1985

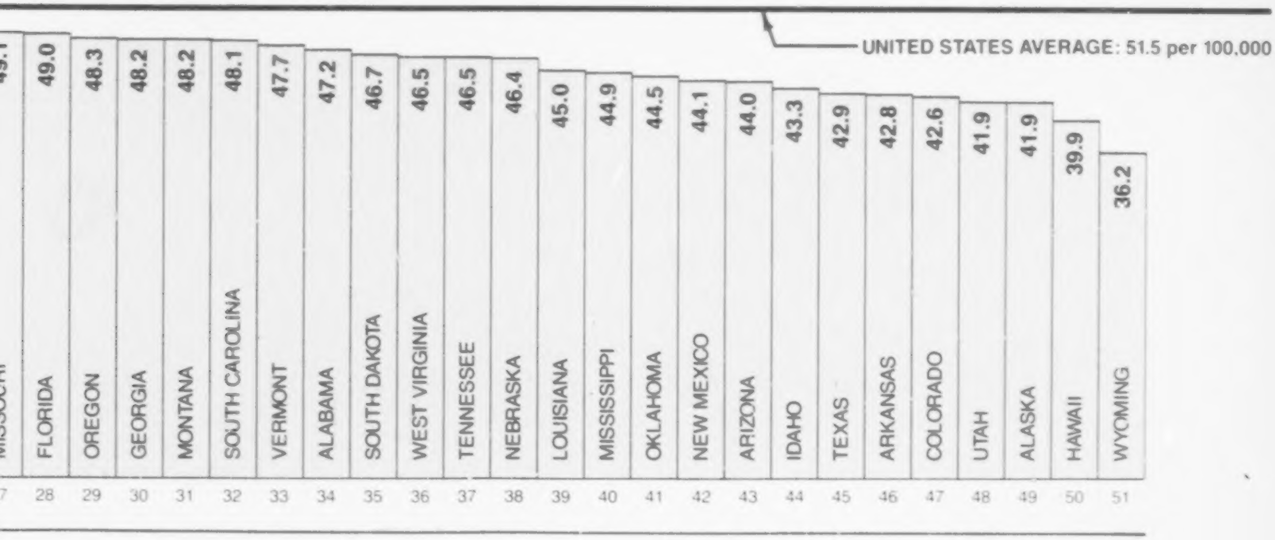


Table 1 — Mortality From Breast Cancer Among All Women Aged 35–74, United States, 1979–81 to 1985

1979 – 81 Death Rate per 100,000					1985 Death Rate per 100,000					
Ages 35 – 74*	Ages 35 – 44	Ages 45 – 54	Ages 55 – 64	Ages 65 – 74	Ages 35 – 74*	Ages 35 – 44	Ages 45 – 54	Ages 55 – 64	Ages 65 – 74	Geographic Area
50.2	17.7	48.2	78.9	101.3	51.5	17.5	46.7	83.6	107.7	**UNITED STATES**
54.6	17.8	50.5	89.0	113.3	57.4	16.7	52.3	93.9	126.6	**New England**
50.4	15.7	50.3	76.7	107.1	53.1	†	53.6	84.5	112.2	Maine
52.4	19.5	41.7	99.0	95.8	63.5	†	74.5	104.3	107.9	New Hampshire
47.7	†	35.8	79.2	110.9	47.7	†	†	†	†	Vermont
56.6	17.7	52.5	92.2	119.7	60.2	17.0	52.8	101.3	134.6	Massachusetts
54.5	22.3	55.4	80.7	101.8	54.5	†	50.0	89.1	119.1	Rhode Island
54.1	17.2	50.1	88.7	112.4	54.4	17.0	47.6	84.1	129.5	Connecticut
57.5	19.8	55.1	89.8	118.5	57.8	19.0	53.0	94.6	120.0	**Middle Atlantic**
59.1	20.8	55.9	93.3	120.6	57.9	18.7	52.8	96.3	119.2	New York
59.4	19.1	57.9	91.9	124.8	61.8	22.4	52.8	104.8	125.7	New Jersey
54.2	18.8	52.2	83.8	112.0	55.1	17.0	53.4	85.8	117.9	Pennsylvania
53.4	18.1	51.0	83.5	110.7	52.6	17.4	46.0	87.0	112.8	**East North Central**
56.8	19.9	54.7	89.1	114.6	53.4	16.6	48.5	85.4	117.8	Ohio
51.6	18.9	48.6	80.1	105.7	49.2	16.4	42.9	85.2	99.1	Indiana
53.4	17.2	50.2	82.1	117.4	54.3	18.6	45.3	92.2	116.1	Illinois
51.5	17.8	51.1	80.7	100.6	53.0	17.8	48.8	88.7	105.2	Michigan
50.8	15.8	46.7	82.6	108.8	49.4	16.2	40.2	76.4	122.2	Wisconsin
48.3	17.5	46.8	71.9	101.2	50.8	17.0	44.0	82.5	111.6	**West North Central**
48.7	17.3	46.6	70.9	107.1	53.8	16.4	51.3	83.3	118.9	Minnesota
47.2	15.7	40.2	76.5	106.0	50.8	14.2	39.1	85.6	126.4	Iowa
48.5	19.1	49.5	72.2	91.4	49.1	20.1	38.8	80.9	104.6	Missouri
46.3	†	42.5	68.0	103.5	52.6	†	†	100.0	115.4	North Dakota
53.7	30.7	50.5	72.3	97.1	46.7	†	†	75.8	89.7	South Dakota
53.6	16.2	57.8	74.2	116.9	46.4	†	43.8	76.0	87.5	Nebraska
44.4	14.3	42.5	66.8	98.1	52.8	16.9	48.2	82.4	118.0	Kansas
47.0	17.8	46.7	72.3	89.8	51.4	19.8	48.7	79.7	102.3	**South Atlantic**
58.9	22.8	69.6	78.8	104.0	56.6	†	†	96.9	120.8	Delaware
55.8	22.6	55.8	84.9	102.9	54.0	17.1	49.1	92.8	107.5	Maryland
62.5	25.1	56.7	94.2	131.6	58.5	†	†	105.9	148.1	District of Columbia
48.1	17.2	47.3	73.7	96.1	54.9	21.2	51.6	87.1	106.4	Virginia
40.3	13.4	39.6	70.8	68.6	46.5	19.2	46.3	64.7	95.4	West Virginia
45.6	18.3	45.5	68.4	86.2	56.3	24.0	57.0	87.7	95.2	North Carolina
46.3	17.7	42.1	76.4	88.7	48.1	18.3	39.8	75.0	109.6	South Carolina
42.6	17.9	41.6	64.3	79.9	48.2	19.8	47.1	74.2	89.6	Georgia
45.8	15.3	46.6	70.1	91.4	49.0	18.6	46.6	72.4	103.6	Florida
43.5	17.0	44.0	68.3	77.0	47.5	15.7	46.5	79.2	89.1	**East South Central**
46.1	16.3	49.8	69.2	84.2	51.1	13.9	45.6	93.8	100.7	Kentucky
42.6	15.0	40.9	72.6	76.2	46.5	14.6	49.2	73.7	86.7	Tennessee
43.3	18.9	44.2	66.9	71.8	47.2	18.6	42.3	80.6	86.3	Alabama
41.6	18.7	41.1	60.8	76.6	44.9	15.9	49.6	66.1	81.7	Mississippi
42.3	16.1	41.4	65.3	81.6	43.5	16.0	40.6	67.1	90.3	**West South Central**
39.4	16.0	38.8	59.8	74.7	42.8	17.9	44.3	59.8	82.7	Arkansas
44.6	17.4	45.2	67.6	83.0	45.0	13.6	42.9	70.3	98.7	Louisiana
43.3	14.6	41.7	69.0	87.2	44.5	14.7	42.5	66.2	99.2	Oklahoma
41.9	16.0	40.7	64.8	81.1	42.9	16.6	39.0	67.6	87.1	Texas
45.1	15.4	41.7	73.6	91.8	43.8	14.3	40.1	73.5	88.6	**Mountain**
48.2	19.0	46.9	74.5	91.7	48.2	†	†	71.4	103.2	Montana
44.5	13.6	41.5	72.4	94.4	43.3	†	47.6	55.3	102.9	Idaho
50.2	†	47.8	102.1	84.1	36.2	†	†	†	†	Wyoming
42.5	12.5	39.7	68.8	92.2	42.6	15.8	37.4	76.0	76.6	Colorado
44.5	21.2	41.4	61.3	91.3	44.1	†	33.8	72.6	104.3	New Mexico
46.8	16.8	43.6	78.7	87.6	44.0	11.1	45.8	73.7	85.0	Arizona
45.7	14.4	42.1	71.0	102.3	41.9	†	33.9	70.6	93.0	Utah
44.5	15.0	35.2	79.4	94.0	49.5	†	45.7	81.0	100.0	Nevada
50.7	17.3	46.0	81.7	106.4	50.6	17.0	43.7	83.5	109.5	**Pacific**
48.4	17.2	40.6	84.6	97.3	50.2	17.0	43.4	80.2	112.8	Washington
45.5	11.5	40.5	76.4	104.1	48.3	20.3	33.1	82.8	108.8	Oregon
52.2	18.2	47.8	83.3	109.2	51.4	16.7	45.3	85.1	109.9	California
51.7	†	53.6	†	†	41.9	†	†	†	†	Alaska
33.7	14.6	35.0	45.9	65.2	39.9	†	†	63.3	90.6	Hawaii

* Adjusted on basis of age distribution of the United States total population, 1940.

† Fewer than 20 deaths; rate not shown.

Source: Computed by Health and Safety Education Division of Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

Table 2—Percent Change in Breast Cancer Mortality Rates United States, 1979–81 to 1985

Percent Change 1979 – 81 to 1985				
Ages 35 – 74	Ages 35 – 44	Ages 45 – 54	Ages 55 – 64	Ages 65 – 74
2.6	**−1.1**	**−3.1**	**6.0**	**6.3**
5.1	−6.2	3.6	5.5	11.7
5.4	†	6.6	10.2	4.8
21.2	†	78.7	5.4	12.6
‡	†	†	†	†
6.4	−4.0	.6	9.9	12.4
‡	†	−9.7	10.4	17.0
6	−1.2	−5.0	−5.2	15.2
5	−4.0	−3.8	5.3	1.3
2.0	−10.1	−5.5	3.2	−1.2
4.0	17.3	−8.8	14.0	.7
1.7	−9.6	2.3	2.4	5.3
1.5	−3.9	−9.8	4.2	1.9
6.0	−16.6	−11.3	−4.2	2.8
4.7	−13.2	−11.7	6.4	−6.2
1.7	8.1	−9.8	12.3	−1.1
2.9	‡	−4.5	9.9	4.6
2.8	2.5	−13.9	−7.5	12.3
5.2	−2.9	−6.0	14.7	10.3
10.5	−5.2	10.1	17.5	11.0
7.6	−9.6	−2.7	11.9	19.2
1.2	5.2	−21.6	12.0	14.4
13.6	†	†	47.1	11.5
13.0	†	†	4.8	−7.6
13.4	†	−24.2	2.4	−25.1
18.9	18.2	13.4	23.4	20.3
9.4	11.2	4.3	10.2	13.9
3.9	†	†	23.0	16.2
3.2	−24.3	−12.0	9.3	4.5
6.4	†	†	12.4	12.5
14.1	23.3	9.1	18.2	10.7
15.4	43.3	16.9	−8.6	39.1
23.5	31.1	25.3	28.2	10.4
3.9	3.4	−5.5	−1.8	23.6
13.1	10.6	13.2	15.4	12.1
7.0	21.6	‡	3.3	13.3
9.2	−7.6	5.7	16.0	15.7
10.8	−14.7	−8.4	35.5	19.6
9.2	−2.7	20.3	1.5	13.8
9.0	−1.6	−4.3	20.5	20.2
7.9	−15.0	20.7	8.7	6.7
2.8	−.6	−1.9	2.8	10.7
8.6	11.9	14.2	‡	10.7
9	−21.8	−5.1	4.0	18.9
2.8	.7	1.9	−4.1	13.8
2.4	3.8	−4.2	4.3	7.4
2.9	−7.1	−3.8	−.1	−3.5
‡	†	†	−4.2	12.5
2.7	†	14.7	−23.6	9.0
27.9	†	†	†	†
2	26.4	−5.8	10.5	−16.9
9	†	−18.4	18.4	14.2
6.0	−33.9	5.0	−6.4	−3.0
8.3	†	−19.5	−.6	−9.1
11.2	†	29.8	2.0	6.4
2	−1.7	−5.0	2.2	2.9
3.7	−1.2	6.9	−5.2	15.9
6.2	76.5	−18.3	8.4	4.5
1.5	−8.2	−5.2	2.2	.6
19.0	†	†	†	†
18.4	†	†	37.9	39.0

‡ Less than 0
Source: Computed from Table 1.

U.S. average); the second lowest rate was found among the Mountain states with an average rate of 43.8 per 100,000 population (15 percent below the national rate).

> 1985 breast cancer rates for all women aged 35-74 were the highest in the Middle Atlantic states.

Mortality rates increased with age with the largest rate of increase evident between the 35-44 and 45-54 age groups, where the rates increased between 2.5 and 3.1 times among the nine geographic areas. The rate of increase slowed with each age group, thereafter, with no significant variation in the rate of increase by region.

The regional mortality rates differed the most from the total death rate among the youngest women, i.e., 35-44.

Variations in breast cancer mortality rates were more pronounced between individual states than between regions of the country (see accompanying figure). The state with the highest age-adjusted breast cancer mortality rate was New Hampshire with a rate 23 percent higher than the U.S. average. New Jersey was close behind with a rate 20 percent above the norm; Massachusetts and the District of Columbia followed with rates 17 and 14 percent, respectively, higher than the 1985 average for the country. The rate in Wyoming was the lowest and averaged almost 30 percent below the U.S. total. Women in Utah, Colorado, Arkansas and Texas all experienced the next lowest breast cancer mortality rates, between 19 and 17 percent below average. There was a 75 percent difference between the states with the highest and the lowest breast cancer death rates

Trends in Breast Cancer Mortality Rates

In the 1978-81 study period, the breast cancer mortality rates differed by 36 percent between geographic areas, ranging from 57.5 per 100,000 population in the Middle Atlantic area to 42.3 in the West South Central area (Table 1). The ranking of the geographic areas remained relatively stable between the two study periods with the exception of a trading of positions between the Pacific and South Atlantic and the East South Central and Mountain areas. These areas moved from fourth to sixth place, and seventh to eighth, respectively. The relative difference between the high and low mortality rates diminished somewhat in 1985; the rates ranged from 57.8 in the Middle Atlantic states to 43.5 in the West South Central area. This 33 percent difference in 1985 is slightly lower than the 36 percent difference for 1979-81.

> U.S. breast cancer mortality rates increased 2.6 percent between the 1979-81 period and 1985.

Breast cancer death rates increased by almost 3 percent between the 1979-81 period and 1985 (Table 2). The largest increases were evident in the South Atlantic and East South Central areas, where the rates increased by more than 9 percent. One-third of the areas of the United States (Mountain, East North Central and Pacific) experienced decreases in breast cancer mortality rates between the two study periods. These decreases were 3, 2 and 0.2 percent, respectively, and are contrasted with the 9.4 and 9.2 percent increases evident in the South Atlantic and East South Central states. Intermediate increases (5.1 and 5.2 percent) were evident for the New England and West North Central areas, respectively.

For the country as a whole, breast cancer mortality rates by age decreased between the study years among the two youngest groups of women but increased in the remaining age groups. This situation prevailed in five of the nine areas of the country. The rates decreased in all age groups in the Mountain area with an overall decrease of 2.9 percent and the largest decrease (7.1 percent) experienced among the 35 to 44 year old women. These decreases were the result of the rates in Wyoming, which were based on a total of only 29 deaths in 1985, however, and thus should be considered rather unstable.

The relative difference in mortality rates varied substantially between states. The 1985 breast cancer rates in North Carolina and New Hampshire were more than 20 percent higher than the 1979-81 rates. The rates in Kansas increased the next most (18.9 percent) followed by West Virginia with a 15.4 percent increase. After Wyoming's 28 percent decrease in age-adjusted mortality rates, Nebraska and South Dakota reported the next largest decrease in breast cancer death rates. It is interesting that the mortality rates should change dramatically and in opposite directions for North Dakota and South Dakota. In 1985, the North Dakota rate was 2 percent above the average for the country, whereas during 1979-81, the rate was 8 percent below the U.S. average rate. In South Dakota, the 1985 rate was 9 percent below average and the earlier mortality rate was 7 percent above. Such differences deserve our watchful attention.

Prevention and Education

In our fight against breast and other cancers, it is imperative that the public be kept informed of those individual activities that may help to prevent the cancers that are, indeed, preventable. Among such activities are increased public awareness of (1) the risk factors associated with this disease; 2) the importance and efficacy of routine breast self examination; 3) the necessity, availability, and effectiveness of early detection/screening tools, e.g., mammography, etc.; and 4) the beneficial effects of certain lifestyle (nutritional) modifications. It is essential, of course, that research into the etiology of and mechanisms associated with the development of all cancers not only continue but increase. Furthermore, additional public health education and support for preventive actions and prevention programs are also key elements in our struggle against this disease. ☐

References

[1] Silverberg, E., Lubera, J. A. "Cancer statistics, 1988." *Ca-A Cancer J. for Clinicians*. 38(1) 5-22, 1988.

[2] "Differences in breast [illegible]ng cancer mortality in the United States." *Sta[illegible]l Bulletin*, 66(4) 12-17, 1985.

[3] National Cancer Institute. *Annual Cancer Statistics Review Including Cancer Trends for 1950-1985*. NIH Pub. No. 88-2789. USDHHS, Public Health Service Bethesda, Maryland, NIH, Feb. 1988.

[4] National Center for Health Statistics. "Advance report of final mortality statistics, 1985." *Monthly Vital Statistics Report*. 36(5) Supp. DHHS Pub. No. (PHS) 87-1120. Hyattsville, Maryland. Public Health Service, August 28, 1987.

[5] American Cancer Society. *1988 Cancer Facts and Figures*. New York, N.Y., American Cancer Society, 1988.

Jacob Baar: An Appreciation

Jacob Baar, Editor of the *Statistical Bulletin* from 1945 to 1966, died at age 83 in New York City on November 30, 1987. A native New Yorker, he joined Metropolitan Life in 1926. Indicative of the intellectual energy that characterized all his work, in his first year with the Company he earned a Master's degree from Columbia University.

At age 24, in his third year with Metropolitan Life and by then a member of the Statistical Bureau, his first book *Psychology* was published. It was a comprehensive review covering virtually all published literature in that field. The book was widely acclaimed by psychologists, and was also praised by then Metropolitan President Haley Fiske, and by Second Vice-President Lee Frankel.

Mr. Baar's energy and commitment to demographic subjects were remarkable throughout a lengthy career, as shown by the diversity of his many demographic presentations, including, "A Century of Divorce in England" (1957); "Suicide in Illinois" (1961); and, "Impact of Some Recent Trends in Family Life" (1965).

After his retirement in 1969, Mr. Baar remained active professionally, especially in research on marriage and divorce. He had completed several chapters for a book on that subject at the time of his death.

He is fondly remembered by his many former colleagues as a cultured, scholarly, always personable man, and as demographer and editor who always sought the highest quality in writing and data analysis. His humanity may have been best expressed editorially when he reminded colleagues that behind all these statistics are *real people*.

For his many contributions to demography, and as one who helped to make possible the continuing editorial tradition of the *Bulletin*, past and present staff gratefully acknowledge Jacob Baar's life. ☐

The Editors

This Appreciation is based on a contribution by Catherine Crean who was a long-time Met Life colleague of Jacob Baar.

STATISTICAL INFORMATION, PLEASE

Q ***How have the number of families and the number of those with children under age 6 changed since the 1970s?***

A Reports by the Bureau of the Census show there were 63.6 million families in the United States in March 1986, and over one-fifth (14.6 million) had children under 6 years old. These children numbered 19.6 million. In 1970 there were 51.6 million families, and of these over one-fourth (13.9 million) had children under 6 years. Children in these families numbered over 20 million. Although between 1970 and 1986 the total number of families increased by almost a quarter, those with children under age 6 increased by just 5 percent. During this period, the number of children under 6 remained virtually unchanged.

* *

Q ***What are the leading causes of accidental death among persons aged 1 and over?***

A The following table shows the ranking of accidental deaths for selected age groups during 1985 (latest official data).

Accidental Deaths and Death Rates by Age Group, U.S., 1985

(Rate per 100,000)

	Number	Rate		Number	Rate
Ages 1 – 4			**Ages 25 – 44**		
Motor vehicle	1,016	7.1	Motor vehicle	15,034	20.4
Fires and flames	613	4.3	Poison (solid, liquid)	2,385	3.2
Drowning	587	4.1	Drowning	1,171	1.6
Inhalation, ingestion of food, object	102	.7	Falls	1,057	1.4
Falls	80	.6	Fires, flames	929	1.3
Ages 5 – 14			**Ages 45 – 64**		
Motor vehicle	2,319	6.8	Motor vehicle	6,885	15.3
Drowning	532	1.6	Falls	1,639	3.6
Fires and flames	453	1.3	Fires, flames	965	2.1
Firearms	235	.7	Poison (solid, liquid)	678	1.5
Falls	71	.2	Inhalation, ingestion of food, object	658	1.5
Ages 15 – 24			**Ages 65 and Over**		
Motor vehicle	14,277	36.1	Falls	8,713	30.5
Drowning	1,135	2.9	Motor vehicle	6,156	21.6
Firearms	479	1.2	Inhalation, ingestion of food, object	2,188	7.7
Poison (solid, liquid)	427	1.1	Surgical complications	1,838	6.4
Falls	392	1.0	Fires and flames	1,471	5.2

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on death data from the National Center for Health Statistics, and population data from the Bureau of the Census.

Please send your questions to
Statistical Information Editor
Health and Safety Education Division, Dept. SB
Metropolitan Life Insurance Co.
One Madison Avenue
New York, NY 10010-3690

Historical Perspectives

50 YEARS AGO

IN THE 1938 STATISTICAL BULLETIN

Metropolitan Life statisticians traced the longevity experience of the 56 signers of the Declaration of Independence and found that, as a group, their life expectancy was below that of men in the U.S. general population. Twenty-four of the signers lived longer than expected, while 32 did not. When the Declaration was signed on July 4, 1776, the signers were relatively young men with an average age of less than 45 years. A closer study revealed that more than one-third (20 out of 56) were less than 40 years, and that the youngest two, Edward Rutledge and Thomas Lynch, Jr., were not yet 27. Twenty-nine signers were between ages 40 and 59. Seven were more than 60, and Benjamin Franklin, at 70, was the oldest. The interval between the signing of the Declaration and the death of the signers varied from less than one year to more than 56 years. John Morton and Button Gwinnett died less than one year after the Declaration was signed. The last survivor, Charles Carroll, lived to age 95. He died on November 14, 1832, more than 56 years later. Thomas Jefferson and John Adams, two prominent signers, died on the same day—July 4, 1826—exactly half a century after the proclamation of the nation's independence. The signers were mainly professional men and of above-average wealth, yet they experienced a life expectancy below that of the U.S. general population. Met Life statisticians questioned whether some of these distinguished men sacrificed part of their lives in building the young republic. (Page 3, September)

Hospitals were replacing homes as the birth places of American babies. In 1936, about 880,000 babies (over 40 percent of those born alive) were delivered in hospitals. The distribution of hospital births varied markedly throughout the United States, with urban areas registering about 72 percent of in-hospital births and rural areas about 14 percent. By states, Nevada (93.4 percent) and California (61.5 percent) reported the highest proportion of in-hospital births for urban and rural areas, respectively. New Hampshire with 34.9 percent, and Kentucky (2.0) registered the lowest. National data, classified according to person in attendance for white women in 1936, showed that the majority of babies born at home and in hospital, were delivered by a physician. The midwife, however, played an important role, especially in southern states. (Currently of the 3.8 million live births, almost 99 percent occur in hospital, and about 3 percent are delivered by midwives.—Ed.) (Page 4, June)

Men suffered fewer minor injuries around the home, yet the likelihood of men being killed in home accidents was greater than that of women. A study among Metropolitan Life Industrial policyholders aged 15-64 (1931-35) showed that fatal home accidents were 1½ times as frequent among men as among women. This was surprising since, at these ages, men spent a large part of their active hours away from home. Falls—one of the chief reasons for the higher incidence of home fatalities among men—caused slightly less than half the deaths of each sex, but were about one-third more frequent among men. Many of the falls among men were off roofs, ladders, porches and balconies. Even falls down stairs were more frequent among men. Next in rank order, deaths from poisonous gases were 3 to 1, men to women. Firearms were the third highest cause of male mortality, but were of less significance among women. Accidental burns, excluding those from conflagrations, were the only type of home accidents in which more women were fatally injured than men. Fatal burns in the home occurred in a 2 to 1 ratio, women over men. (Currently, accidental deaths in the home among persons aged 15-64 occur at a ratio of 2.4 to 1, men to women.—Ed.) (Page 1, May)

The fight against tuberculosis was being won as the 1938 death rate from this disease for the Original Death Registration States fell to about one-fifth of the 195 per 100,000 rate prevailing in 1900. As a result, it was estimated that about 200,000 fewer people would die from TB during 1938 than if the 1900 rate had prevailed. Many lives were saved and many families spared disruption. Despite great gains, Metropolitan statisticians cautioned that the battle was not yet won. Additional facilities for diagnosis, education, and better working and living conditions would continue to help reduce TB mortality. (In 1986, 22,768 TB cases were reported to the Centers for Disease Control, an increase of 2.6 percent over the previous year.—Ed.) (Page 1, October)

A comparison of the marriage rates in certain industrial states with the U.S. business cycle reaffirmed such a close relationship that these rates could be used as a predictor of economic conditions. For the period 1865 to 1935 Metropolitan Life statisticians graphed the fluctuations in marriage rates with business failures. This revealed peaks and troughs in marriage rates closely matched with economic conditions. One outstanding exception occurred during the war years when, although business was booming, young men were drawn out of civilian life by the war. Young people, reluctant to marry during periods of economic stress, provided an accumulation of marriageable men and women available at the first upturn of economic conditions. (Page 1, July)

[illegible] Printed in U.S.A.

Metropolitan Life
AND AFFILIATED COMPANIES

SB

STATISTICAL BULLETIN

Vol 69 No 4 Oct – Dec 1988

2 **Hispanic Americans: An Emerging Group.** A two-part, in-depth study highlighting demographic and social findings for this growing segment of our population. An accompanying commentary, **A Common Language, A Diverse People**, by Robert Crimmins, Executive Vice-President, Metropolitan Life, discusses Spanish-speaking U.S. citizens—their ethnic differences and contributions.

16 **Health Insurance of Women of Childbearing Age: United States, 1985.** Susheela Singh, Ph.D., of The Alan Guttmacher Institute, gives a complete, nationwide picture showing numerous gaps that exist in insurance coverage for young women.

25 **Costs of Normal Births: Regional Variations, 1986.** This analysis points up the differences in obstetrical and hospital costs between states and geographic divisions of the country.

Contents

Statistical Bulletin Vol. 69, No. 4, Oct.–Dec. 1988

1 From the Editor's Desk

2 Hispanic Americans: An Emerging Group
2 Part 1: Magnitude, Ethnicity and Geographic Location
8 Part 2: Profile of Diverse Characteristics

13 Commentary: A Common Language, A Diverse People
Robert J. Crimmins, Executive Vice-President
Metropolitan Life Insurance Company

14 Capsule Briefs

16 Health Insurance of Women of Childbearing Age: United States, 1985
Susheela Singh, Ph.D., Senior Research Associate
The Alan Guttmacher Institute

25 Costs of Normal Births: Regional Variations, 1986

33 Statistical Information, Please

34 Contents and Index: 1988

Back Cover: Historical Perspectives

John J. Creedon
President and
Chief Executive Officer

Donald A. Odell
Executive Vice-President

Paul S. Entmacher, M.D.
Senior Vice-President and
Chief Medical Director

Doris Bressler
Director
Health and Safety Education

Charles B. Arnold, M.D., M.P.H.
Editor-in-Chief

Joan W. Parks
Managing Editor

Stanley Kranczer
Margaret Mushinski
Contributing Editors

Hazel Forbes
Associate Contributing Editor
and Editorial Quality Editor

Ada Arieta
Editorial Assistant

Stanley Kranczer
Business Manager

Guru S. Bale, Ph.D.
John Sentowski
Technical Specialists

Corporate Health Strategies
Data Contributor

Paul Verga
Art Director

Lawrence Studio, Inc.
Graphic Design

The Statistical Bulletin (ISSN 0741-9767) is published four times a year by Metropolitan Life Insurance Company, 428 E. Preston Street, Baltimore, MD 21202. Printed in U.S.A. Subscriptions: U.S., its territories and Canada, $50 for one year; libraries $40 (U.S. currency). Outside U.S. and Canada add $10 for postage and handling. Send to Statistical Bulletin, P.O. Box 64187, Baltimore, MD 21264. Application to mail at second class postage rates is pending at Baltimore, MD, and at additional mailing offices. Postmaster—send address changes to Statistical Bulletin, 428 E. Preston St., Baltimore, MD 21202.

Copyright 1988

The Editorial Board of the Statistical Bulletin is located at Metropolitan Life Insurance Co., One Madison Avenue, New York, NY 10010. John J. Creedon, President and Chief Executive Officer; Robert G. Schwartz, Chairman; Arthur G. Typermass, Senior Vice-President and Treasurer; Richard M. Blackwell, Vice-President and Secretary.

Letters will be published at the discretion of the editor as space permits and subject to editing and abridgment. They should be typewritten double-spaced. Send to:

Statistical Bulletin, 16UV
Metropolitan Life Insurance Company
One Madison Avenue, New York, NY 10010

From the Editor's Desk

Recently, Stanley Kranczer, a fellow *SB* editor, and I were reviewing some 1986-87 Census Bureau social and demographic findings on Hispanic Americans, some of which surprised us. From that conversation grew this issue's two-part lead article, "Hispanic Americans: An Emerging Group."

Growth of Hispanic Population

Were you aware that in 1987 Americans of *Mexican origin* represented two-thirds of the nation's total 18.8 million Hispanics? Further, that the total Hispanics' rate of natural increase so exceeds other American populations that, by the year 2000, their numbers will be over 31 million. By the year 2010, Hispanics will probably have surpassed blacks in size of population.

Amidst those analyses, there is a darker side to their growth, too. It is represented by lagging socioeconomic indicators, such as lower levels of educational attainment, and 50 percent greater unemployment than the total U.S. population.

In a commentary, Robert Crimmins, Executive Vice-President, Metropolitan Life, describes the remarkable social diversity of the U.S. Hispanic population, mentioning that, as a mostly immigrant group, they vary significantly in their reasons for coming to this country, and in their aspirations. Further, because of the U.S. experience with earlier immigrant groups, he writes, we know that their potential for contributions has only begun to be felt.

Cholesterol Hot Line

Want to know the latest news about cholesterol that's available to your doctor? In this issue's "Capsule Briefs," you can find a phone number which will connect you to a telephonic medical education seminar on that blood lipid.

Women's Health Insurance Coverage

Women's health insurance coverage in 1985 is featured in this issue in an article by Susheela Singh, Ph.D., of The Alan Guttmacher Institute. She shows numerous gaps which exist nationally in that coverage. For instance, 40 percent of married teenagers do *not* have health insurance. In the peak years of childbearing, 33 percent of all women aged 20-24 do not have coverage of any kind. In an election season especially, this article is most appropriate, filled with potential political implications. Are the presidential candidates' medical care advisors reading *SB*?

Normal Births: Cost Variation

Next time you meet a local obstetrician, ask her: when compared to other states, in 1986 why would OBs in Minnesota have charged such low fees for deliveries of normal births? Anticipation of that discussion with that practitioner could include reference to this issue's article on regional American variations in costs of uncomplicated births.

In that discursive and inquisitive spirit, I wish you good reading. ☐

Charles B. Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement opposite page.

Hispanic Americans: An Emerging Group

Part 1. Magnitude, Ethnicity and Geographic Location

The Hispanic population of the United States has been, and is expected to continue increasing significantly faster than the non-Hispanic population. Moreover, projections by the Bureau of the Census indicate that their growth may be so rapid that, in less than a quarter of a century, Hispanics could become the largest minority group in the United States.[1,2] This forecast is predicated on the fulfillment of the Bureau of the Census's "middle" series projections for fertility, immigration and mortality for the non-Hispanic population and the "high"[*] series for Hispanics—the most likely assumptions based on comparisons with current annual estimates. Even if the growth in the number of Hispanics should prove to be less spectacular, it is clear that by the turn of the century they will constitute a substantial proportion of our population.

The optimistic outlook for persons of Spanish origin is supported by an analysis of their past increases. As recently as April 1980 (the last Census), the civilian noninstitutional population of the United States contained 14,458,000 Hispanics, but by March 1987, their total rose to 18,790,000 or by 30 percent.[†] By contrast, the total population increase during this period was just over 7 percent. As may be seen in Table 1, projections of the total population (including Armed Forces Overseas) indicate that in July 1990 the number of Hispanics will likely exceed 22 million and may reach 31.2 million by the year 2000. At that point in time, the Spanish-origin population is expected to constitute 11.6 percent of our nation's population; blacks probably will comprise 13.3 percent of the total. In less than another decade, it is likely that the number of blacks will be exceeded by the number of persons of Spanish origin. It should be borne in mind that the further into the future projections are taken, the more likely unforeseen or moderating events will temper the eventual outcome. Thus, although the forecast for 2025 indicates that the number of Hispanics could rise to as many as 60.9 million, a more conservative estimate would place the figure between that value and 39.3 million (the middle series projection).

> In less than another decade, it is likely that the number of blacks will be exceeded by the number of persons of Spanish origin.

High Rate of Natural Increase

It is not known which projection series will turn out to be the closest to actuality, but all anticipate declines in the rate of Hispanic population increase due to a moderation in their fertility levels. Nonetheless, these relatively high rates (compared to other ethnic groups) have been, and will most likely remain, the driving force behind Hispanic growth. Thus, the primary reason for the expansion in the number of Hispanics is their high rate of natural increase (birth rate minus death rate). This is in contrast to the common impression that immigration has been the dominant factor for their significant growth.

> The primary reason for the expansion in the number of Hispanics is the high rate of natural increase.

In the future, the older segment of the Hispanic population will take on added

---

[*] Assumes high fertility, low mortality and high net immigration.

[†] The civilian noninstitutional population includes members of the Armed Forces in the United States living off post or with their families on post.

Table 1 — Estimates and Projections of the Hispanic* Population By Age, United States, 1982 – 2025

Year	All Ages	Under 5	5 – 17	18 – 24	25 – 34	35 – 44	45 – 54	55 – 64	65 and over
	Numbers in 1,000s								
March† 1982	15,364	1,705	4,041	2,274	2,750	1,736	1,245	860	753
1985	16,940	1,813	4,337	2,406	3,083	2,134	1,372	1,033	813
1987	18,790	1,994	4,684	2,652	3,611	2,445	1,448	1,034	922
July‡ 1990	22,053	2 690	5,337	2,811	4,242	2,900	1,720	1,209	1,144
2000	31,207	3,510	7,972	3,499	5,129	4,590	2,993	1,709	1,805
2025	60,925	6,103	14,407	6,847	9,226	7,741	5,969	5,025	5,607
	Percent Distribution								
March† 1982	100.0	11.1	26.3	14.8	17.9	11.3	8.1	5.6	4.9
1985	100.0	10.7	25.3	14.2	18.2	12.6	8.1	6.1	4.8
1987	100.0	10.6	24.9	14.1	19.2	13.0	7.7	5.5	4.9
July‡ 1990	100.0	12.2	24.2	12.7	19.2	13.2	7.8	5.5	5.2
2000	100.0	11.3	25.5	11.2	16.4	14.7	9.6	5.5	5.8
2025	100.0	10.0	23.7	11.2	15.1	12.7	9.8	8.3	9.2
	Percent Increase								
1982-1987	**22.3**	**17.0**	**15.9**	**16.6**	**31.3**	**40.8**	**16.3**	**20.2**	**22.4**
1990-2000	**41.5**	**30.5**	**49.3**	**24.5**	**20.9**	**58.3**	**74.0**	**41.4**	**57.8**
2000-2025	**95.2**	**73.9**	**80.7**	**95.7**	**79.9**	**68.6**	**99.4**	**194.0**	**210.6**
	Sex Ratio (Males per 100 Females)								
March† 1985	99	104	105	111	99	95	95	83	74
July‡ 1990	102	105	104	108	113	101	93	88	72
2000	103	105	105	108	113	111	99	89	71
2025	104	105	105	106	109	110	110	107	80
	Percent of Total Population								
March† 1982	**6.8**	**9.9**	**8.9**	**7.8**	**7.1**	**6.3**	**5.6**	**3.9**	**3.0**
1985	**7.2**	**10.1**	**9.6**	**8.6**	**7.6**	**6.8**	**6.1**	**4.6**	**3.0**
1987	**7.9**	**11.0**	**10.4**	**10.0**	**8.4**	**7.3**	**6.3**	**4.7**	**3.3**
July‡ 1990	**8.8**	**14.0**	**11.8**	**10.9**	**9.7**	**7.7**	**6.8**	**5.7**	**3.6**
2000	**11.6**	**19.9**	**16.0**	**14.2**	**14.1**	**10.5**	**8.1**	**7.2**	**5.2**
2025	**20.2**	**34.0**	**29.7**	**26.9**	**24.1**	**19.4**	**17.1**	**13.4**	**9.5**

* Includes persons from Mexico, Puerto Rico, Cuba, Central and South America, Spain and those not identifying country of origin.

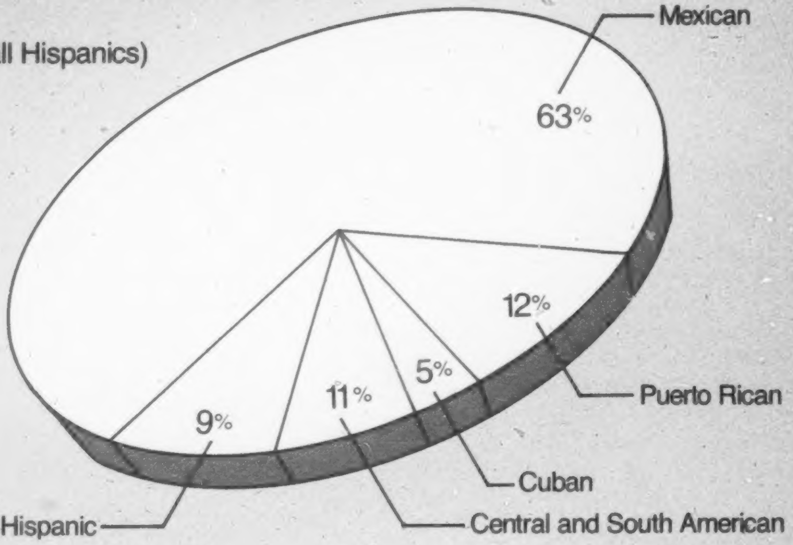
† Refers to the civilian noninstitutional population and includes members of the Armed Forces in the United States living off post or with their familiies on post.

‡ Resident population, including Armed Forces Overseas.

Source of basic data: Various reports from the Bureau of the Census.

Figure A—Hispanics, by Type of Origin March 1987

(Percent of all Hispanics)



Source: Bureau of the Census, Current Population Reports Series P-20, No. 416.

importance. The number of persons aged 35 and over is expected to experience the largest relative gains. For example, between 1990 and 2000, data from the high projection series indicate that persons aged 35-44 and those 65 and over will increase by nearly three-fifths. During this interval the number of Hispanics aged 45-54 is projected to rise by nearly three-fourths. The remaining group in the over-35 category, namely those aged 55-64, is anticipated to increase by more than two-fifths. On the other hand, more moderate gains are forecast for persons under age 35.

Older Population Gains

After the turn of the century, Hispanics aged 45 and over will record the largest percentage gains. Between 2000 and 2025 the number of persons aged 45-54 may double, those 55-64 could triple and, for the population aged 65 and over, the relative increase might be even larger. In 2025 the number of Hispanics aged 65 and over will constitute 9.2 percent of all Spanish-speaking persons. This is in sharp contrast to their present representation—4.9 percent. It may also be ascertained from Table 1 that the only other age groups that will constitute a larger proportion of the Hispanic population than at present are persons 45-54 and 55-64. Another notable observation is that by 2025 men are expected to out-number women in every age group except 65 and over.

The Hispanic population is not a homogeneous demographic category; it is comprised of at least five distinct ethnic groups.

Distinct Ethnic Groups

The Hispanic population is not a homogeneous, demographic category and, before any further analysis is presented, clarification of the term Hispanics[‡] (Latin Americans or Spanish origin) is in order. This generalization covers at least five distinct ethnic groups. Mexicans are the predominant subdivision. In March 1987 they numbered almost 11.8 million, or more than three-fifths of all persons of Spanish heritage (see Figure A). Next in order are Puerto Ricans, whose count of 2.3 million represents 12.2 percent of the entire group. Numerically, they are closely followed by persons who can trace their origins to a Central or South American country—2.1 million or 11.4 percent. Cubans comprise just over 1 million or 5.4 percent of all persons of Hispanic background and those from the Dominican Republic, Spain or other Spanish origin constitute the remaining 1.6 million or 8.4 percent of the category.

Historically, immigration has played an important role in the rapid increase of the Hispanic population in the United States. In addition to highly complex economic and social reasons, political instability and civilian strife have precipitated the northern movement of Latin Americans. It is therefore understandable that the flow of immigrants to the United States has not been uniform and at times was volatile.

Many Mexican-Americans are the descendants of ancestors who lived in parts of the West and Southwest before they were ceded to the United States. However, the main reason for the rapid growth in the number of Mexicans residing within our borders was the availability of employment. The demand for workers throughout the country and, in particular, in the states bordering Mexico, swelled with the onset of World War II and has subsequently been the impetus for continued immigration to the United States.

Puerto Ricans, like Mexicans, mainly came to the United States to find work. Puerto Ricans were granted American citizenship when the island became a Commonwealth in 1917 and, since that time, especially after World War II, began a steady migration to the mainland. Currently, there is a steady annual ebb and flow of Puerto Ricans to the continent and back to the island. Their numbers are not included in immigration statistics because of their citizenship status.

The influx of Spaniards, Central and South Americans, Cubans and Dominicans was brought about by diverse forces. Political turmoil and internal conflict were the principal reasons for the large increase in the number of persons leaving the Dominican Republic, Cuba, El Salvador, Nicaragua and some South American countries. Other immigrants seeking a better life, a job, or to join a previously settled family member made their way to the United States. Recently the volume of newcomers may have slackened but verification has been very difficult to document. It is known that, in addition to those who came surreptitiously, many entered on student, tourist or temporary work visas and remained.

Fully 90 percent of all Hispanics in the United States reside in just nine states.

Primary States of Residence

Fully 90 percent of all Hispanics in the United States reside in just nine states. Moreover, their geographic distribution is as diverse as their ethnic background. California and Texas are the domiciles of well over half of the 18.8 million Spanish-origin persons. In March 1987 the Hispanic population numbered 6.2 million in

---

[‡] Latin Americans represent persons from Mexico, Central and South America as well as those from Puerto Rico, Cuba, and the Dominican Republic.

Table 2 — Total and Hispanic Population, Selected States United States, 1970–1987

		Resident Population						Civilian Noninstitutional Population*			Geometric Average Annual Increase	
Area	Population	April 1, 1970	Percent Hispanic	Percent of Hispanic	April 1, 1980	Percent Hispanic	Percent of Hispanic	March 1, 1987	Percent Hispanic	Percent of Hispanic	1970–80	1980–87
	United States—Total	**203,302,000**			**226,546,000**			**243,400,000†**			1.1	1.0
	Hispanic — Total	9,072,602	4.5		14,608,673	6.4		18,790,000	7.7		4.9	3.7
	Mexican	4,532,435		50.0	8,740,439		59.8	11,762,000		62.6	6.8	4.4
	Puerto Rican	1,429,396		15.7	2,013,945		13.8	2,284,000		12.2	3.5	1.8
	Cuban	544,600		6.0	803,226		5.5	1,017,000		5.4	4.0	3.5
	Other Spanish‡	2,566,171		28.3	3,051,063		20.9	3,727,000		19.8	1.7	2.9
	Arizona — Total	1,775,000			2,718,000			3,386,000†			4.4	3.1
	Hispanic — Total	264,770	14.9		440,701	16.2		664,000	19.6		5.2	6.1
	Mexican	239,811		90.6	396,410		89.9					
	California — Total	19,971,000			23,668,000			27,663,000†			1.7	2.2
	Hispanic — Total	2,369,292	11.9		4,544,331	19.2		6,249,000	22.6		6.7	4.7
	Mexican	1,857,267		78.4	3,637,466		80.0					
	Colorado — Total	2,210,000			2,890,000			3,296,000†			2.7	1.9
	Hispanic — Total	225,506	10.2		339,717	11.8		347,000	10.5		4.2	.3
	Mexican	103,584		45.9	207,204		61.0					
	Florida — Total	6,791,000			9,746,000			12,023,000†			3.7	3.0
	Hispanic — Total	405,036	6.0		858,158	8.8		1,256,000	10.4		7.8	5.7
	Cuban	250,406		61.8	470,250		54.8					
	Puerto Rican	28,166		7.0	94,775		11.0					
	Mexican	20,869		5.2	79,392		9.3					
	Illinois — Total	11,110,000			11,427,000			11,582,000†			.3	.2
	Hispanic — Total	393,204	3.5		635,602	5.6		692,000	6.0		4.9	1.2
	Mexican	160,419		40.8	408,325		64.2					
	Puerto Rican	87,477		22.2	129,165		20.3					
	New Jersey — Total	7,171,000			7,365,000			7,672,000†			.3	.6
	Hispanic — Total	288,488	4.0		491,883	6.7		737,000	9.6		5.5	6.0
	Puerto Rican	138,896		48.1	243,540		49.5					
	Cuban	68,048		23.6	80,860		16.4					
	New Mexico — Total	1,017,000			1,303,000			1,500,000†			2.5	2.0
	Hispanic — Total	308,340	30.3		477,222	36.6		535,000	35.7		4.5	1.7
	Mexican	119,049		38.6	233,772		49.0					
	New York — Total	18,241,000			17,558,000			17,825,000†			–.4	.2
	Hispanic — Total	1,351,982	7.4		1,659,300	9.5		2,182,000	12.2		2.1	4.0
	Puerto Rican	916,608		67.8	986,389		59.4					
	Cuban	89,596		6.6	76,942		4.6					
	Texas — Total	11,199,000			14,229,000			16,789,000†			2.4	2.3
	Hispanic — Total	1,840,648	16.4		2,985,824	21.0		4,207,000	25.1		5.0	5.1
	Mexican	1,619,064		88.0	2,752,487		92.2					

* Includes members of the Armed Forces in the United States living off post or with their families on post.

† Resident population as of July 1, 1987.

‡ Includes persons from Central and South America, Spain and those not identifying country of origin.

Source of basic data: Various reports from the Bureau of the Census and unpublished estimates from the March 1987 Current Population Survey.

California, or 23 percent of the state's total population, and 4.2 million or 25 percent of the population of Texas. By far, the vast majority of Hispanics in both California and Texas are of Mexican origin. In New York—the state with the third largest number of Spanish-origin persons—the bulk of the 2.2 million Hispanics are of Puerto Rican ancestry. On the other hand, in Florida, the only other state with 1 million or more Hispanics—1.3 million—Cubans are the major Spanish-origin group. The four previously mentioned states, taken together, contain three-fourths of all Hispanics in the United States.

The growth pattern of the major Spanish-origin groups exhibit significant variations. This may be ascertained from Table 2, which presents the nine states with the largest number of Hispanics categorized by the leading Spanish-origin ethnic group. Between April 1980 and March 1987, the number of Mexican-origin persons in the United States increased from 8.7 million to 11.8 million, or by 4.4 percent annually. At the same time, the number of Puerto Ricans rose by 1.8 percent each year. The average annual percentage gains were 3 to 3½ percent for the Cuban and other Spanish-speaking populations.

Geographic Disparities

There are also considerable geographic disparities in the patterns of Hispanic growth, as a state-by-state analysis can attest. During the 1980s the average annual increase in the number of Hispanics accelerated in only three states, namely, Arizona, New Jersey and New York. In Arizona and New Jersey the annual increases amounted to about 6 percent compared with increases of 5.2 percent and 5.5 percent, respectively, in the earlier decade. The sharpest increase in Hispanic growth occurred in New York. In this, the second most populous state, the annual percentage gain in the period under review rose from 2.1 percent to 4.0 percent. On the other hand, the Hispanic growth rate experienced marked declines in Colorado, New Mexico and Illinois. In these states, the average increases during the 1980s were less than 2 percent; in the 1970s they ranged between 4 and 5 percent. In Texas the Hispanic population has been increasing at a steady pace of 5 percent annually since the 1970s. In the two remaining states with large numbers of Hispanics, the growth rates in Florida and California, although diminished, were 5.7 percent and 4.7 percent, respectively.

Hispanics have become a significant proportion of the inhabitants of several states. A close look at Table 2 reveals that Spanish-speaking persons are one-fifth of the population residing in Arizona, and about one-fourth of those in California and Texas. In these states persons who can trace their origins to Mexico comprise about nine-tenths of the Hispanic population in Arizona and Texas, and four-fifths of those in California. Furthermore, over one-third of New Mexico's population is composed of Hispanics. However, it is somewhat surprising to note that in New Mexico, Mexicans constitute a much smaller proportion of the Spanish-speaking population than in the neighboring states. Another interesting point is that of the states shown in the table, there were relatively fewer Hispanics in New Mexico's population in 1987 than in 1980. Colorado was the only other state to have this experience. ☐

Hispanic Americans: An Emerging Group

Part 2. Profile of Diverse Characteristics

The preceding discussion concentrated on the demographic characteristics of the Hispanic population. In this section, social and economic features of this important ethnic group will be presented. The information was collected from supplementary questionnaires to the annual population survey of the Bureau of the Census.

Hispanics are much younger than the rest of the U.S. civilian noninstitutional population.

Median Age

As a group, Hispanics are much younger than the rest of the civilian noninstitutional population of the United States. In March 1987 the median age of Hispanics was 25.1 years whereas the figure for persons not of Spanish origin was 32.6 years. Within the Hispanic population category, persons of Mexican descent recorded the lowest median age —23.5 years—closely followed by Puerto Ricans—24.3 years. At the other end of the age spectrum, Cubans were by far the oldest Hispanic group. Their median age was 35.8 years. The first tier of Table 3, which presents selected characteristics of the Hispanic population, reveals that over 12 percent of the Cuban population was aged 65 and over. This proportion was between 3 and 4 times that for Mexicans, Puerto Ricans, and the Central and South American groups. Almost 10 percent of persons of "other" Spanish background were aged 65 and over. Since median age is a representation of the age distribution of a population, it is not surprising to note that over half of the Mexicans and Puerto Ricans were less than 25 years of age. For the remaining Spanish-speaking groups, the proportion at these ages was roughly the same as that for the entire population of the United States—around three-eighths.

Social and Economic Characteristics

As was the case when demographic statistics were analyzed, very different social and economic characteristics exist among ethnic subdivisions of the Hispanic population. For instance, with regard to marital status, single persons represent less than one-fourth of the Cuban population aged 15 and over, but more than a third of the Puerto Ricans. Divorce terminated around one-tenth of Puerto Rican, "other" Spanish, and Cuban marriages but only 4 percent of those among Central and South Americans. About 7½ percent of Cuban marriages were dissolved by the death of a spouse, nearly the same proportion as in the general population, but roughly double the relative number of the other four Hispanic subgroups.

In the overall population, four-fifths of the persons residing in a family unit dwell in a household in which both the husband

Very different social and economic characteristics exist among ethnic subdivisions of the Hispanic population.

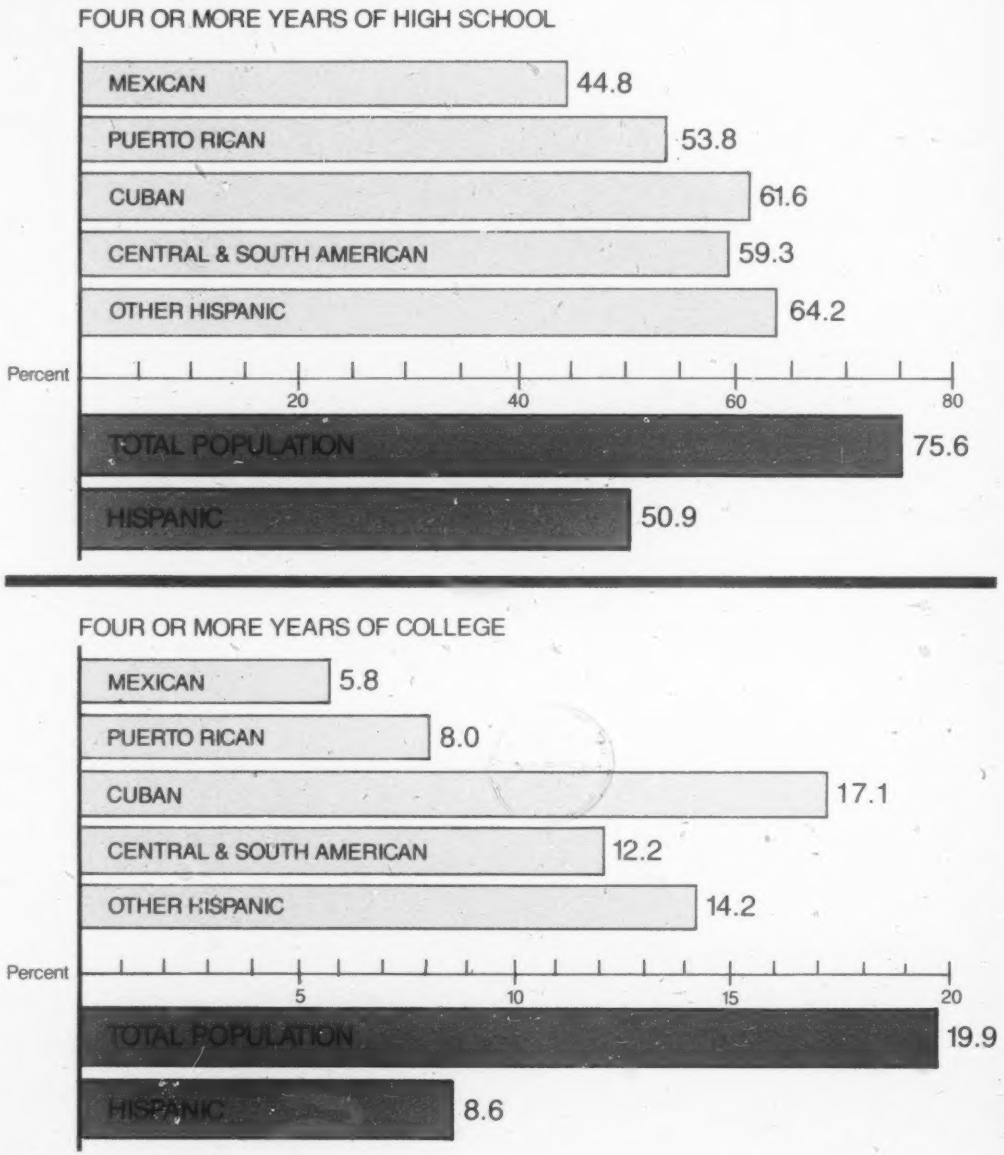
Table 3—Selected Characteristics of All Persons and Persons of Hispanic Origin, by Type of Origin,* United States, March 1987

Characteristics	Total Population	Hispanic Origin						Not of Hispanic Origin
		Total	Mexican	Puerto Rican	Cuban	Central & S. American	Other Spanish	
Numbers in Thousands	**238,789**	18,790	11,762	2,284	1,017	2,139	1,588	**219,999**
Percent Distribution		100.0	62.6	12.2	5.4	11.4	8.4	
Percent Male	48.6	50.1	51.6	46.4	50.3	47.0	48.4	**48.5**
All Ages	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Under 15	21.8	30.3	33.0	32.9	16.5	24.5	22.4	**21.1**
15 – 24	15.7	19.4	20.3	18.7	15.6	19.9	16.3	**15.3**
25 – 34	17.9	19.2	18.9	18.1	16.9	22.5	19.8	**17.8**
35 – 44	14.1	13.0	11.9	14.5	12.4	16.8	14.2	**14.2**
45 – 54	9.6	7.7	6.9	6.9	13.3	9.0	9.9	**9.8**
55 – 64	9.2	5.5	4.8	5.3	13.2	4.5	7.8	**9.5**
65 and over	11.7	4.9	4.2	3.6	12.1	2.8	9.6	**12.3**
Median age	**31.9**	**25.1**	**23.5**	**24.3**	**35.8**	**27.3**	**30.9**	**32.6**
Marital Status (age 15+)	**100.0**	100.0	100.0	100.0	100.0	100.0	100.0	**100.0**
Single (never married)	26.3	31.5	31.8	35.3	22.5	33.5	28.7	**26.0**
Married	59.3	57.5	57.9	51.6	59.9	59.2	58.0	**59.4**
Widowed	7.1	3.9	3.7	3.8	7.5	2.9	4.2	**7.3**
Divorced	7.3	7.1	6.6	9.3	10.1	4.4	9.1	**7.3**
Type of Family	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Married-couple families	79.9	70.9	74.8	53.0	77.5	66.8	72.0	**80.5**
Female householder, no husband present	16.2	23.4	19.2	43.3	17.7	25.5	22.8	**15.7**
Male householder, no wife present	3.9	5.7	6.0	3.7	4.8	7.7	5.2	**3.8**
Educational Attainment (age 25+)								
Less than 5 years of school	2.4	11.9	15.4	10.3	6.0	6.1	5.2	**1.8**
Four or more years of high school	75.6	50.9	44.8	53.8	61.6	59.3	64.2	**77.3**
Four or more years of college	19.9	8.6	5.8	8.0	17.1	12.2	14.2	**20.6**
Median school years completed	**12.7**	**12.0**	**10.8**	**12.1**	**12.4**	**12.3**	**12.4**	**12.7**
Labor Force Participation (age 16+)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
In labor force	64.5	65.0	66.4	53.9	66.7	71.3	60.7	**64.5**
Employed	57.5	54.8	54.7	42.9	61.2	63.4	55.1	**57.7**
Unemployed	7.0	10.2	11.7	11.0	5.5	7.9	5.6	**6.8**
Not in labor force	35.5	35.0	33.6	46.1	33.3	28.7	39.3	**35.5**
Occupation Group Employed (age 16+)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Managerial & professional	25.1	12.3	10.4	13.9	21.6	10.7	18.3	**26.0**
Technical, sales & admin. support	31.3	25.8	22.7	33.8	32.6	26.4	31.7	**31.7**
Service occupations	13.5	18.0	17.3	16.6	11.3	25.5	17.3	**13.2**
Farming, forestry & fishing	2.9	6.7	10.0	1.0	1.3	1.8	3.2	**2.6**
Precision, craft & repair	12.0	14.1	15.4	10.2	14.6	12.1	12.5	**11.8**
Operators, fabricators & laborers	15.2	23.1	24.2	24.5	18.6	23.5	17.0	**14.7**
Income (1984)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	100.0	**100.0**	**100.0**
Under $4,000	24.0	27.0	27.8	30.0	22.5	24.0	24.0	**23.7**
$ 4,000 — $ 9,999	24.5	29.9	29.3	33.8	30.0	26.6	26.6	**24.5**
$10,000 — $14,999	14.9	16.5	16.7	14.5	18.1	16.8	16.8	**14.7**
$15,000 — $19,999	10.9	10.5	10.9	8.8	10.5	10.2	10.2	**10.9**
$20,000 — $24,999	8.0	6.6	6.7	6.2	7.0	7.8	7.8	**8.1**
$25,000 and over	17.7	9.5	8.6	6.7	11.9	14.6	14.6	**18.1**
Median income	**$10,417**	**$8,187**	**$8,195**	**$6,449**	**$9,247**	**$8,618**	**$9,805**	**$10,568**
Percent of Families Below Poverty Level in 1986	**10.9**	**24.7**	**24.9**	**38.1**	**13.3**	**18.7**	**19.4**	**9.9**

* Refers to the civilian noninstitutional population and includes members of the Armed Forces in the United States living off post or with their families on post.

Source: Bureau of the Census, Current Population Reports, Series P-20, Nos. 416 and 422.

Figure B — Educational Attainment of All Persons and Persons of Hispanic Origin United States, March 1987



Source: Table 3.

and wife are present. This, in general, is not too dissimilar to the experience of each of the Hispanic subgroups with the notable exception of Puerto Ricans. Among this ethnic group, just about half of the families are composed of married couples. Another significant disparity is that more than two-fifths of Puerto Rican families are maintained by women with no husband present. This proportion is more than double that for Mexicans and Cubans.

Education

Cubans have achieved the highest education level of all Hispanics. In fact, the relative number of Cubans with four or more years of college is twice as large as that for all Hispanics —17.1 percent versus 8.6 percent (Figure B). The median years of formal schooling attained by persons from "other" Spanish backgrounds is exactly the same as that for Cubans. By comparison, Mexicans reported the lowest median years of schooling completed. Just 5.8 percent of Mexicans completed college; the national figure was 19.9 percent.

Cubans have achieved the highest education level of all Hispanics.

According to the March 1987 statistics, two-thirds of the civilian noninstitutional population aged 16 and over was in the labor force, with the vast majority employed. Compared with the general population, the unemployment rate was somewhat higher among Hispanics. However, Cubans and persons of "other" Hispanic background reported significantly lower unemployment rates than the overall Hispanic category and consequently higher employment rates. The labor force participation rate was also high among persons from Central and South America. For this ethnic group, more eligible men and women were actively seeking employment than those in any other Hispanic subdivision. Puerto Ricans have a particularly low labor force participation rate.

More Mexican-origin Hispanics are employed in precision, craft and repair jobs than any other Hispanic group.

Occupation

The occupation profile of Cubans most closely resembles that of the general population. Among Cubans, over one-fifth are employed in managerial and professional positions with an additional third working in technical, sales and administrative support jobs. Half of the persons in the "other" Hispanic subgroup are gainfully employed in these same two major categories. The proportion was almost as large among Puerto Ricans. Spanish-speaking persons from Central and South America are disproportionately represented in service positions—fully one-fourth of this group earned their living in this field. Another standout, although not surprising, is the observation that one-tenth of Hispanics with ties to Mexico work on farms. No other

Hispanic group even approaches this level. More Mexican-origin Hispanics are employed in precision, craft and repair jobs than any other ethnic group—although their relative number is not much higher than that for Cubans. Persons employed as operators, fabricators and laborers represent almost one-fourth of the Mexican, Puerto Rican and Central and South American ethnic groups.

Reflecting the occupational distribution of Hispanic subgroups, Cubans and "other" Spanish-origin persons earned the most money. The median earnings for these professionally oriented groups were $9,200 and $9,800, respectively. Their counterparts from Central and South America reported a median income of $8,600. On the other hand, Puerto Rican men and women earned the least money of any Hispanic subgroup and, as a result, about two-fifths of their families were below the poverty level—almost four times the general population figure. As a group, one-fourth of Hispanic families had incomes below the poverty level but, once again, Cubans reported the largest variation from the composite—only 13 percent were in this category.

> As a group, in 1987 one-fourth of Hispanic families had incomes below the poverty level.

A Varied Portrait

It is clear that the analysis of Hispanics in the United States presents a varied portrait. Hispanics came from different countries with diverse backgrounds and have not assimilated to the extent of previous groups of immigrants. As such, Hispanics do not exist as a cohesive entity. Yet, they are bonded by a common language and rising aspirations to reap the benefits of a dynamic economy. Geographically, Hispanics already have a significant impact on the social, political and economic structures of many communities and, with the passage of time, their influence will increase and spread. Moreover, since they are the youngest and fastest growing ethnic group, their needs, especially for education and employment, will have to be addressed, not only at the local level but by state and federal officials. □

> Although not a cohesive entity, Hispanics are bonded by a common language and rising aspirations to reap the benefits of a dynamic economy.

References

[1] U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 952 (Middle Series), *Projections of the Population of the United States by Age, Sex, and Race: 1983-2080*, Washington, D.C., 1984.

[2] U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 995 (High Series), *Projections of the Hispanic Population: 1983-2080*, Washington, D.C., 1986.

Commentary
A Common Language, A Diverse People

The size and phenomenal growth of the American Hispanic or Latino population is increasingly the subject of discussion in the media and the business community. And, as the figures on the foregoing pages show, that attention is well warranted.

These discussions usually focus on such themes as the "Latinization" of the American accent or the increasing economic clout of Hispanic Americans. Comparisons are made between the current wave of people arriving in the United States from Mexico, Central America, South America, Puerto Rico, Cuba and other Spanish-speaking nations, and the influx of European immigrants who arrived during the late 19th and early 20th century.

But much of this discourse overlooks several important points. As we at Metropolitan have learned, there really is no Hispanic market in the conventional demographer's sense of the phrase. The estimated 19 million Hispanic people who reside in the United States share little more than a common language. Their reasons for being here, and their aspirations, differ significantly. Many recent immigrants are political refugees, who see their residence in the United States as a temporary condition. Many others desire to assimilate into the American mainstream. Still others have been citizens for generations.

Hispanics have not all arrived from one place nor have they landed on these shores in a relatively short period of time, unlike past waves of immigrants. They have come from all walks of life—from migrant farm workers seeking economic opportunity, to professionals seeking refuge from political oppression. As such, they have different expectations.

These are lessons Metropolitan continues to learn in its efforts to become more responsive to the diverse peoples who, perhaps for lack of a better term, are commonly referred to as Hispanics. And they are lessons that we learn eagerly because we have grown into the great company we are today through the contributions of past generations of immigrants—both employees and customers. In fact, at the turn of the century, more than half of our customers were foreign born.

As an insurer and provider of financial services, Metropolitan continues to have a vested interest in the health and financial well-being of all its customers. Speaking to an individual in his or her native language is only the beginning of the process of understanding and fulfilling that person's needs.

The contributions of the many ethnic groups that have shaped our society were most fully realized only when the doors to financial security and independence were opened. In that sense, the Hispanic people are no different from any other group who preceded them. Their contributions have only begun to be felt. It's up to those of us who have reaped the benefits of the struggle of our own immigrant forefathers to continue to allow our society to become enriched by newcomers seeking those same opportunities. ☐

Robert J. Crimmins
Executive Vice-President
Metropolitan Life Insurance Company

Capsule Briefs

are timely literature selections with broad reader interest

Nutrition: What Your Doctor Likely *Did Not* Learn in School

Medical schools have long tried to teach the complex subjects needed to prepare students for careers as physicians. One subject that is apparently still not taught well, however, is nutrition. This author reviewed the literature and reported that a recent survey of nutrition in medical education "reconfirms (its) inadequacy." Further, the author compares those findings to an earlier survey, noting that the results were "virtually indistinguishable from those ... 22 years earlier." (M. Nestle, **Journal Nutrition Education**, 20(1) Supplement: S1-S6, February 1988.) □

Cholesterol Education: Where Your Physician May Get It

Modern communications technology can help solve many problems of needed information, including cholesterol education for physicians. If you are curious about what doctors may be learning about cholesterol, call this number: 1-800-MD-GOALS (touch-tone phones only). You will discover a continuing medical education seminar (menu driven) with six national experts offering discrete presentations on cholesterol education, sponsored by the drug company, **Merck Sharp and Dohme**. □

Fear of Flying: When It May *Not* Be Irrational

Occupational stress, including that of commercial airline pilots, has recently received increased coverage in the media. Many sources of pilot stress are well known, such as irregular work hours, on-call duties, unpredictable weather, unfamiliar airports, and responsibility for others' lives. Added recently have been company mergers, strikes, and adverse publicity about near-crashes. At troubled Eastern Airlines, for instance, sick time for pilots has doubled in recent months. (C.A. Raymond, **JAMA**, 259(21):3097-98, June 3, 1988.) □

Impact of Longer Resident-Physician Working Hours

Though much has been written recently about clinical medical training, most analyses have either been too intimately involved to be fully objective, or have been too aloof to convey the personal turmoil inherent. In this brilliant, short analysis the author, a physician, offers a balanced perspective on the adverse impact that long strenuous work hours have on the resident, his life, the medical care given, and the impact of that schedule on medical education. (This article could be required reading for every taxpayer, medical care user or health care policymaker.—Ed.) (T.B. McCall, **New England Journal of Medicine**, 318(12):775-778, March 24, 1988.) □

Caveat Emptor in Laboratory Testing: False Positives

Did you ever stop to think how often medical laboratories erroneously report results of tests? In one study of accuracy of reporting a particular immunoassay test (expected to be 97-99 percent accurate), the Centers for Disease Control found that error rates for this test were as high as 66 percent during several years surveillance of 13 drug testing laboratories. The author, a lawyer and an expert on drug testing, has focused on the social impact of such errors on employers and employees. (E.J. Imwinkelried, **The Sciences**, pp. 22-29, Sept.-Oct., 1987.) □

Shyness: Are Some People Born That Way?

These authors report their research on the presence or absence of symptoms of shyness in two groups of children. They were studied from ages of 21 and 31 months until they were seven years old to understand the psychosocial and physiological ways that shy children differed from others. The patterns of social interaction and the biology of shy children were clearly different in parameters such as sympathetic nervous system activity (adrenaline related), greater excitability of muscle tone, and salivary cortisol levels. (The research would clearly have important implications for child raising, education, medical care, and all the other places in the world in which sensitivity to children's needs must occur.—Ed.) (J. Kagan, *et al*, **Science**, 240:167-171, April 8, 1988.) □

Nature Versus Nurture Issues in Premature Deaths

Which figures to be the more influential issue in premature deaths, genetics or environment? This Denmark study was of deaths between ages 16 and 58 of adoptees from 960 families who placed the children for adoption between 1924 and 1926. The investigators analyzed the causes of premature death in the adoptive and the biological parents as well as in the adopted children. In that way, it was possible to estimate, the genetic and the environmental effects on the adopted children's deaths. Genetic factors were significantly stronger for all causes of death, for infections, heart attacks and stroke. Vascular diseases were also significantly associated with the family environment, as were cancer deaths. (T.I.A. Sorensen, *et al*, **New England Journal of Medicine**, 318(12): 727-732, March 24, 1988.) □

Health Insurance of Women of Childbearing Age: United States, 1985

Women of childbearing age are a special population in terms of their need for health care as well as health insurance. In 1985, 71 percent of all hospital admissions among 15-44 year olds were for women, and of these 9.8 million admissions, half were for delivery or reproductive problems.[1] The extent of women's access to medical care has implications not only for the health of women themselves, but also for the health of infants.[2]

Women, infants and children face special difficulties in regard to health insurance.

Women, infants and children face special difficulties in regard to health insurance. Among the major determinants of such coverage are age, marital status and work force participation: single, widowed, divorced or separated women are much more likely to be uninsured than married women. Not all insurance policies cover all dependents—some may cover spouses but not teenage children, while others may not cover infants from birth; some policies that cover dependents may provide only partial or no coverage for maternity care. And, despite the increasing number and fairly high proportion of women in the labor force, not all employers provide health insurance and, in most cases, the insurance that is provided does not cover all maternity care costs. In addition, even when they work, women are more likely to be involved in part-time work and/or service and retail occupations—employment areas that frequently provide little or no insurance at all.[3]

The relative importance of specific factors in determining the extent and type of health insurance among U.S. women is described below. The source of the data is the March 1985 Current Population Survey, carried out by the Bureau of the Census on a nationally representative sample of about 58,000 households, and 38,784 women aged 15-44.[4]

The National Situation

In 1985, about 83 percent of the 56.152 million U.S. women aged 15-44 had some form of health insurance.[5] While government programs (mainly Medicaid) provided some medical coverage for mothers and their children, about 17 percent of all women aged 15-44 still had no health insurance at all. Coverage from more than one source is not uncommon: among the 83 percent with some insurance, 67 percent were covered by group plans, 9.8 percent by private individual plans, 8.9 percent by the Medicaid program and 4.1 percent by other government programs, chiefly CHAMPUS (Civilian Health and Medical Program of the Uniformed Services). Among women with some insurance, about 1.999 million have both private group coverage as well as supplemental individual plans and approximately 1.614 million have both private and public insurance. Excluding overlap between sources and ordering the coverage by group, individual, other government and Medicaid, 67 percent of women aged 15-44 have group plans, 6.3 percent have individual private plans, 2.3 percent are covered by other government programs and 7.4 percent by Medicaid.

Despite the availability of government programs for medical coverage, about 17 percent of all women aged 15-44 in 1985 had no health insurance at all.

Demographic Differentials in Coverage

Overall, married women are much more likely to have private insurance than unmarried women. Some 78 percent of married women have private group insurance compared to 55 percent of unmarried women. Moreover, only 11 percent of all married women have no health insurance versus 23 percent of unmarried women (Table 1). Much of a married woman's insurance coverage is indirect, i.e., obtained as a dependent on either her husband's group or individual insurance policy.

The differences by marital status do not hold at all ages, however. The proportion uninsured among teenage married women is significantly higher than that among unmarried women—40 percent compared to 21 percent. This is true despite the fact that

---

Table 1 — Insurance Coverage for Women Aged 15–44* by Age and Marital Status United States, 1985

Age/Marital Status	Percentage Group	Individual	Medicaid	Other Government	None	Number 1,000s
All Women	**67**	**10**	**9**	**4**	**17**	**56,152**
15–19	59	11	11	5	22	9,103
20–24	54	10	10	4	27	10,411
25–29	69	9	10	3	15	10,686
30–34	74	9	8	3	12	9,987
35–39	75	10	7	4	11	8,762
40–44	73	11	6	5	13	7,203
Married Women	**78**	**10**	**4**	**5**	**11**	**29,241**
15–19	43	7	10	8	40	529
20–24	68	8	6	7	18	3,683
25–29	78	10	4	4	11	6,522
30–34	81	9	4	4	9	6,881
35–39	81	10	3	5	9	6,399
40–44	80	10	2	6	10	5,227
Unmarried Women	**55**	**10**	**15**	**3**	**23**	**26,911**
15–19	60	11	11	5	21	8,574
20–24	47	10	13	3	33	6,728
25–29	55	9	20	1	20	4,164
30–34	59	8	19	2	18	3,106
35–39	58	11	18	2	17	2,363
40–44	54	11	17	4	21	1,976

*Percentages do not add up to 100 because women may have insurance from more than one source.
Source of basic data: United States Department of Commerce, Bureau of the Census, Current Population Survey, March 1985.

government programs cover about the same proportion for both groups (18 percent and 16 percent, respectively). Unmarried teenagers are more likely to have coverage through their parents. Married teens and their husbands are no longer dependents, are apt to work at jobs that do not provide group coverage and are unlikely to be able to afford an individual plan.

> Among married women 20-24, the proportion uninsured is twice the average for all older married women.

Among married women aged 20-24, the proportion uninsured is twice the average for all older married women—18 and 9 percent, respectively. Unmarried women of this age also are in a poor position—33 percent are uninsured versus around 19 percent for older unmarried women. Teenagers and women aged 20-24 account for 33 percent of all births annually but have the highest proportion of uninsured, with proportions averaging around one-quarter.

Socioeconomic Differentials in Insurance Coverage

Figure A presents the insurance experience of women aged 15-44 by selected demographic characteristics. As shown, Hispanic women have the highest probability of being uninsured—28 percent—almost

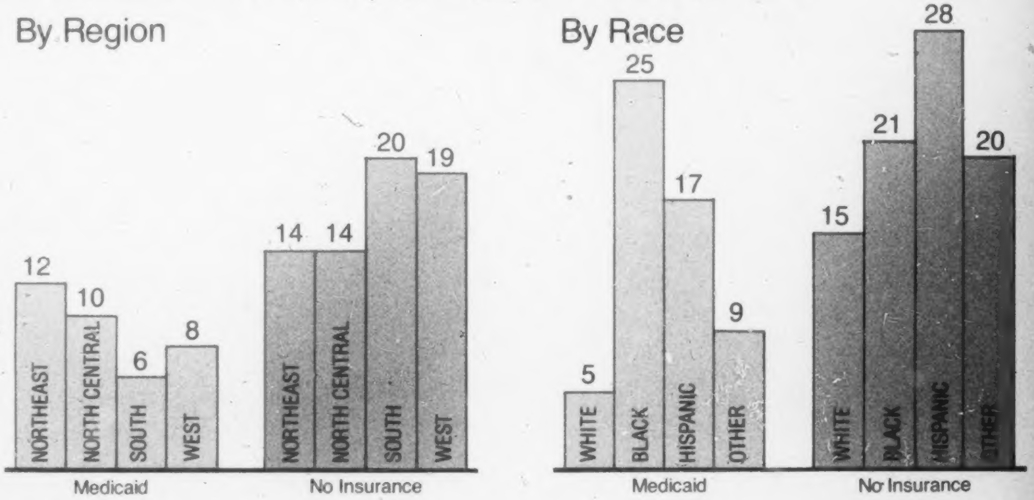
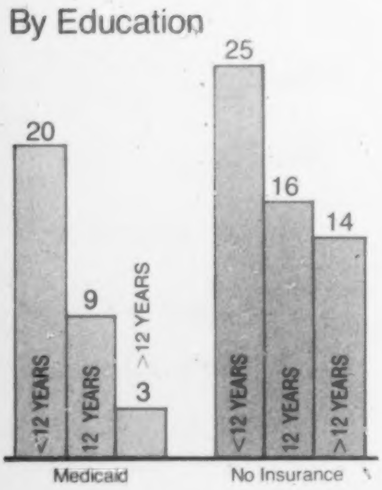


Figure A — Percent of Women Aged 15–44 Who Have No Insurance and Percent on Medicaid, Among Subgroups of the Population

Source of basic data: United States Department of Commerce, Bureau of the Census, Current Population Survey, March 1985.

twice the proportion of uninsured white women. Women in the South and West are more likely to be uninsured than those living in the Northeast and the North Central regions.

Poverty status, regardless of marital status, is one of the factors most strongly associated with insurance coverage. Among women 15-44, poor women (those under 150 percent of the poverty level) on average have a one in three chance of being uninsured despite the much higher coverage that Medicaid provides for this group. This compares to a one in 10 chance of being uninsured among those living above the 150 percent poverty level. It should be noted that poverty status is estimated using the 1984 official poverty thresholds: a woman's poverty level is her family's income divided by the poverty threshold for her family. For example, the annual poverty threshold for a family of four with two children under 18 was $10,527; if the family's income was $15,000, its poverty level would be 142 percent ($15,000/$10,527).[6] Poor women also have a very low chance of being covered by group plans. Lack of health insurance is highest among women who are both young and have family incomes below the poverty level. About 40 percent of 15-24 year olds who are poor lack insurance.



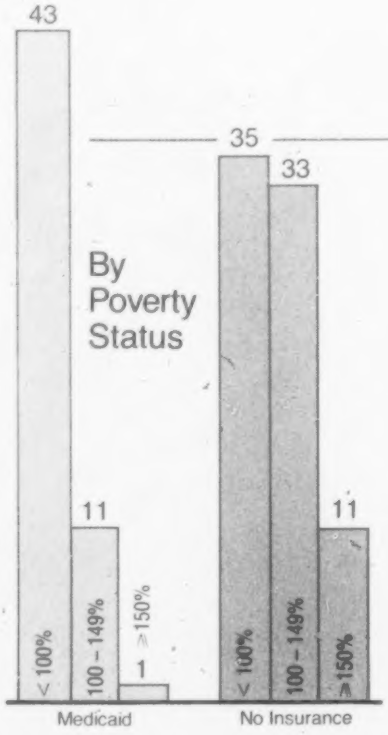


Table 2—Insurance Coverage for Women Aged 15–44* According to Occupation and Marital Status† United States, 1985

Characteristics	Percentage					Number 1,000s
	Group	Individual	Medicaid	Other Government	None	
Married Women:‡						
Industry						
Agriculture	47	27	6	2	25	1,034
Retail trade	74	12	3	2	15	2,869
Services	62	18	5	3	20	383
Others	85	8	2	2	10	22,798
Did not work	27	14	34	8	25	987
Unmarried Women:						
Industry						
Agriculture	45	15	15	2	29	285
Retail trade	53	12	7	3	30	5,224
Services	48	13	11	2	31	1,547
Others	73	10	5	2	17	12,130
Did not work	31	9	35	5	26	7,725

* Percentages do not add up to 100 because women may have insurance from more than one source.
† Characteristics of the husband are used for married women.
‡ Total is less than that reported in Table 1 because of couples who do not live in the same household (the majority of these are in the Armed Forces) or because of data matching problems.
Source of basic data: United States Department of Commerce, Bureau of the Census, Current Population Survey, March 1985.

Education reveals differentials like those among the poor, i.e., uninsurance levels decline as educational attainment rises. Again, this relationship exists despite the much higher Medicaid coverage of less educated married women. Among unmarried women, the less educated are also much less likely to have private insurance than the better educated. However, this differential is compensated for by higher Medicaid coverage resulting in about the same proportion uninsured for all three education groups (24 percent). It is striking that even with 13 or more years of schooling, unmarried women still have a 22 percent chance of being uninsured (data not shown).

Employment and the Pattern of Insurance Coverage

Large differences in the proportions of women with private insurance are found by type of work. Employment in agriculture or the service industries was associated with the lowest level of group coverage for both unmarried and married women. Those who worked in agriculture (themselves or their husbands) compensated by buying individual plans, especially married women. Those who worked in retail had a slightly higher probability of having group coverage—marginally more for unmarried women (53 percent) and substantially more for married women (74 percent). By comparison, all other industries had significantly higher chances of providing group insurance.

Unmarried women who worked in agriculture, retail or service industries were almost twice as likely to have no insurance than those who worked in other industries, 30 and 17 percent, respectively. Among married women, 18 percent of those whose husbands worked in these areas had no coverage compared to only 10 percent of workers in all other industries combined. A husband's self-employment status is associated with a significantly lower probability of his wife having any private insurance (data not shown).

Profile of Women Who Are Uninsured

The racial, regional and residential characteristics of women without health insurance are quite similar to those of the general population of women of reproductive age (Figure B). However, uninsured women are younger, more likely to be unmarried, less educated and poorer than the general population. These differences hold for both unmarried and married women, except that uninsured unmarried women have similar educational levels as all unmarried women.

Recent employment trends make it likely that increasing proportions of women of childbearing age will be without health insurance. Since 1970 the proportion employed in industries with high levels of insurance coverage (most notably manufacturing and transportation) has been declining while the proportion employed in occupations and industries least likely to have health insurance (particularly service and retail sales) has been rising. This is compounded by increasing proportions of women in their early 20s working part-time.[4]

Determinants of Lacking Insurance: Results From a Multivariate Analysis

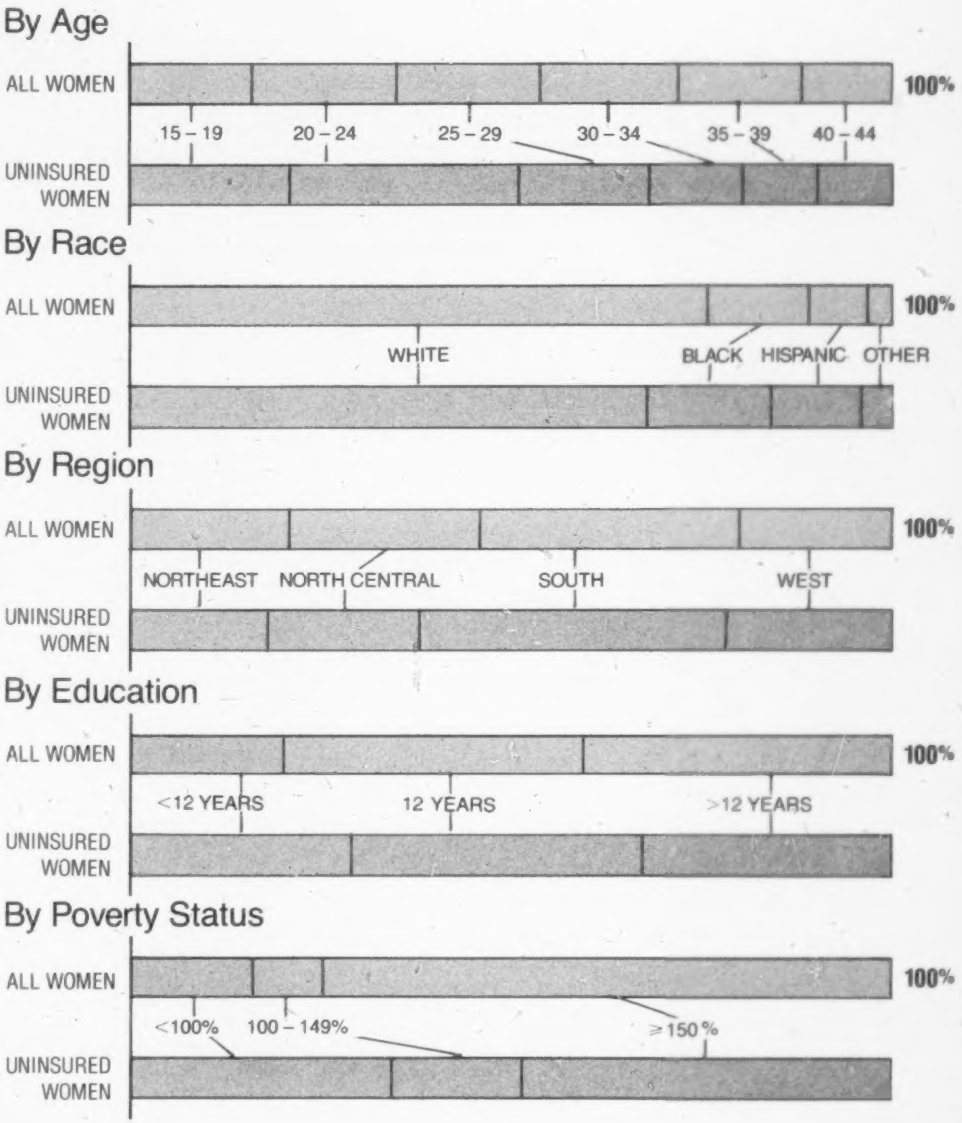
Using logistic regression, we tested the independent as well as the interrelated association between the above described socioeconomic variables and insurance coverage. Separate analyses were carried out for married women, unmarried women and all women, which allowed the entry of husbands' employment status in the married women's analyses and the inclusion of a married/not married factor into the analyses of all women. After holding other factors constant, the characteristics originally strongly related to insurance coverage remained. It is important to bear in mind that these relationships exist after incorporating the contribution of Medicaid to providing coverage for disadvantaged subgroups. When private insurance alone was considered, the relationship of all factors was much stronger.

Being unmarried significantly increases the chances of being uninsured—19 to 29 percent—as does being under 25 years of age (17 to 34 percent). After controlling for all other factors, being black often has no significant association with being uninsured.

After controlling for all other factors, being black often has no significant association with being uninsured.

This suggests that government programs providing insurance (principally Medicaid) have succeeded in removing the effect of being black on the probability of lacking private insurance, after other factors are controlled. This is not true for Hispanic women, however, who have a higher probability of being uninsured. Compared to all other women, Hispanic women have an increased risk of about 41 percent among married women, and about 21 percent among unmarried women.

Figure B — Percent Distribution of All Women Aged 15–44 and of Uninsured Women



Source of basic data: United States Department of Commerce, Bureau of the Census, Current Population Survey, March 1985.

Being poor is the variable most strongly associated with being uninsured, regardless of marital status. Comparing women below and above 150 percent of the poverty level, unmarried women are at a 55 to 58 percent increased risk. Married women who are poor are at a 93 percent extra risk of being uninsured compared to nonpoor married women: the risk of being uninsured is 65 percent higher for all poor women aged 15-44 versus nonpoor women at this age. By comparison, the increased risk due to other characteristics, although significant, is much smaller—19-40 percent for employment characteristics, and increases of 17-41 percent for being unmarried, young or Hispanic.

Being poor is the variable most strongly associated with being uninsured, regardless of marital status.

Conclusion

In America today, we have a substantial population of poor, undereducated younger women with inadequate or no health insurance. It is reasonable to think that extension of appropriate insurance coverage to this population will be less expensive than the alternative of providing for the higher cost of illness and disability caused by insufficient preventive care. □

Susheela Singh, Ph.D.
Senior Research Associate
The Alan Guttmacher Institute

This article is based on research supported by the Pew Memorial Trust.

References

[1] Graves, E.J. "Utilization of short-stay hospitals: United States, 1985 Annual Summary." *Vital and Health Statistics*, Series 13, No. 91, 1987.

[2] Institute of Medicine. *Preventing Low Birthweight.* Washington, D.C., National Academy Press, 1985.

[3] U.S. Bureau of the Census. *Statistical Abstract of the United States, 1987.* Washington, D.C., Government Printing Office, 1987; and Chollet, D. "Uninsured in the United States: The nonelderly population without health insurance." Employee Benefit Research Institute, Washington, D.C., March 4, 1987.

[4] U.S. Department of Commerce, Bureau of the Census. "Current Population Survey, March 1985," computer data tape.

[5] Earlier estimates of the proportion uninsured in the total population were made from 1977 National Medical Care Expenditures Survey data. Kasper, J.A., Walden, D.C., Wilensky, G.R. "Who are the uninsured?" Data Preview 1 of the National Medical Care Expenditure Survey and later articles using these and other data: Farley, P.J. "Who are the uninsured?" *Milbank Memorial Fund Quarterly: Health and Society*, 63(3):476-503, 1985; Monheit, A.C., Hagan, M.M., Beck, M.L., Farley, P.J. "The employed uninsured and the role of public policy." *Inquiry*, 22:348-364, Winter 1985; Wilensky, G.R. "Solving uncompensated hospital care: Targeting the indigent and the uninsured." *Health Affairs*, *3(4):50-62, 1985.*

[6] *U.S. Department of Commerce, Bureau of the Census. "Characteristics of the population below the poverty level: 1984." Current Population Reports*, Series P-60, No. 152, Washington, D.C., U.S. G.P.O. 1986.

INTENTIONAL
BLANK

David Johnson

Costs of Normal Births: Regional Variations, 1986

An estimated $16 billion was spent on maternity care costs in the United States in 1986. According to a recent national survey, this represents an increase of 25 percent over the 1982 figure. The report further states that in 1986 maternity care for an uncomplicated delivery of a normal infant cost $2,923.[1,2] These results are in agreement with the reported claims data Metropolitan Life processed for an uncomplicated normal delivery in 1986.

Charges for an uncomplicated vaginal delivery averaged $2,900 across the country in 1986.

According to the Metropolitan Life data, mean 1986 claims for routine vaginal births to group policyholders' employees were about $3,000. These charges represent the experiences of 25,600 women insured under Metropolitan group health insurance contracts. The average charges described in this analysis were from claims made by employees and dependents of companies insured by Metropolitan, and represent the billed amounts for hospital and physician fees for CPT-4* Codes 59400 and 59410. The median age of the women in this case series was 23 and the modal age was 27½ years; 96 percent of the group was 36 years old or younger. In this analysis, presentation of total

---

***** *CPT-4—Physicians' Current Procedural Terminology*, Fourth Edition.

Table 1—Geographic Variation in Average Charges Typical* Vaginal Delivery, Selected States,† 1986

Geographic Area	Number of Cases	Total Hospital & Physician	Hospital Charge Total	Hospital Charge Room & Board	Hospital Charge Ancillary	Physi Cha
		Average Costs ($)				
United States	25,600	2,900	1,690	600	1,090	1,21
New England	1,529	3,060	1,760	730	1,030	1,30
Maine	127	2,170	1,360	590	770	81
New Hampshire	224	2,490	1,500	630	870	99
Massachusetts	501	3,310	1,890	780	1,110	1,42
Connecticut	503	3,390	1,880	760	1,120	1,51
Middle Atlantic	2,788	3,180	1,640	770	870	1,34
New York	1,176	3,340	1,430	750	680	1,91
New Jersey	620	3,340	1,900	780	1,120	1,44
Pennsylvania	992	2,930	1,750	800	950	1,18
East North Central	5,291	2,730	1,700	650	1,050	1,03
Ohio	1,785	2,740	1,670	620	1,050	1,07
Indiana	657	2,380	1,540	540	1,000	84
Illinois	1,515	3,090	1,940	780	1,160	1,15
Michigan	505	2,870	1,960	790	1,170	91
Wisconsin	829	2,300	1,330	500	830	9
West North Central	1,966	2,560	1,640	590	1,050	92
Minnesota	267	2,100	1,380	580	800	72
Iowa	399	2,160	1,370	600	770	79
Missouri	841	3,030	1,930	640	1,290	1,10
Nebraska	146	2,260	1,510	480	1,030	78
Kansas	224	2,510	1,590	530	1,060	92
South Atlantic	4,730	2,940	1,690	520	1,170	1,25
Maryland	406	3,050	1,500	540	960	1,55
Virginia	507	2,660	1,560	500	1,060	1,10
West Virginia	125	2,780	1,690	580	1,110	1,09
North Carolina	1,019	2,440	1,550	500	1,050	89
South Carolina	292	2,590	1,650	440	1,210	94
Georgia	892	2,930	1,720	440	1,280	1,21
Florida	1,332	3,490	1,890	580	1,310	1,60
East South Central	1,450	2,810	1,780	490	1,290	1,03
Kentucky	400	2,680	1,650	630	1,020	1,03
Tennessee	498	2,870	1,840	450	1,390	1,33
Alabama	299	3,070	2,000	500	1,500	1,07
Mississippi	253	2,610	1,650	350	1,300	96
West South Central	4,040	2,730	1,560	460	1,100	1,17
Arkansas	210	2,470	1,490	370	1,120	98
Louisiana	609	2,840	1,650	440	1,210	1,19
Oklahoma	419	2,780	1,600	500	1,100	1,18
Texas	2,802	2,730	1,550	470	1,080	1,18
Mountain	1,150	2,470	1,490	510	980	98
Colorado	483	2,580	1,610	600	1,010	97
New Mexico	150	2,300	1,360	390	970	94
Arizona	187	2,350	1,340	430	910	1,01
Utah	156	2,220	1,270	490	780	95
Pacific	2,621	3,470	1,920	710	1,210	1,55
Washington	219	3,130	1,730	620	1,110	1,40
Oregon	154	2,760	1,700	650	1,050	1,06
California	2,248	3,540	1,950	720	1,230	1,53

* "Typical" deliveries are exclusive of outliers according to DRG guidelines.

† Deliveries of employees and dependents of group health customers of Metropolitan Life Insurance Company; total sample of 25,600 deliveries; states with fewer than 100 are excluded.

Source: Claims data from Metropolitan Life Insurance Company merged and edited by Corporate Health Strategies, Inc. Analyses and computations by Health and Safety Education Division, Metropolitan Life Insurance Company.

Percentage	
Hospital of Total	Ancillary of Hospital
58	64
58	59
63	57
60	58
57	59
55	60
53	53
43	48
57	59
60	54
62	62
61	63
65	65
63	60
68	60
58	62
64	64
66	58
63	56
64	67
67	68
63	67
57	69
49	64
59	68
61	66
64	68
64	73
59	74
54	69
63	72
62	62
64	76
65	75
63	79
57	71
60	75
58	73
58	69
57	70
60	66
62	63
59	71
57	68
57	61
55	63
55	64
62	62
55	63

and component claims charges is restricted to the 39 states in which at least 100 normal deliveries were performed; these data represent 97.5 percent of the reported cases.

The geographic distribution of the 1986 cases closely corresponded to the national distribution of live births for 1985.[3] The East North Central states contributed the largest proportion of the 1986 cases and the 1985 live births (21 and 17 percent, respectively). The vast majority of the Metropolitan deliveries (73 percent) were performed in the states in the middle and southern regions of the country (Table 1 and Figure A). As with the national natality data, the states in the three areas comprising the South contributed the largest proportion of cases (40 percent of the Metropolitan-insured normal deliveries and 35 percent of U.S. live births).

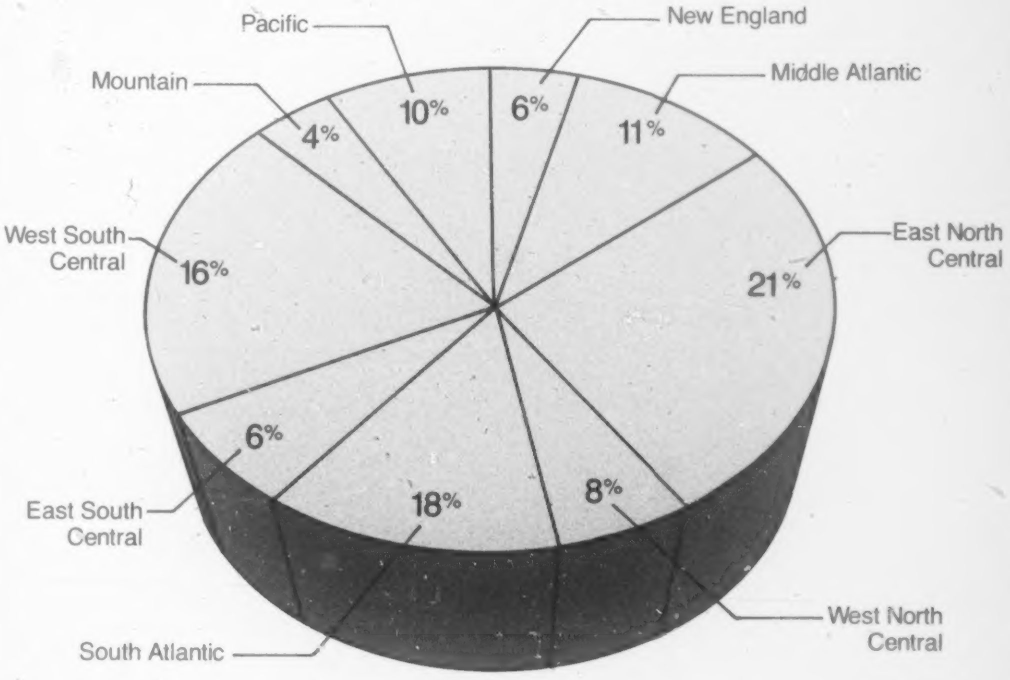
Cost Variations

The charges for a normal delivery varied by 40 percent between geographic divisions of the country. The highest average charge ($3,470) was recorded in the Pacific division, exceeding the $2,900 national average by 20 percent. The Pacific charge was exactly $1,000 higher and 40 percent greater than the average recorded in the neighboring Mountain division. As shown in Figure B, the total claims charges in the Middle Atlantic division were the second highest in the

---

The highest average charge was reported in the Pacific division with claims 20 percent above the U.S. total.

Figure A — Distribution of Metropolitan-Insured Uncomplicated Deliveries by U.S. Geographic Area, 1986



Source: Table 1

country, followed by those in the New England states. The states in the middle areas of the country registered the lowest delivery costs for a normal delivery. Of note is the fact that lower than average total charges were found in the South, where the largest proportion of deliveries took place.

State Variation in Costs

Between-state costs varied by as much as 135 percent. The highest total charge ($4,210) was reported for the 67 deliveries performed in the District of Columbia, while the lowest was $1,790 charged in North Dakota for 46 uncomplicated vaginal deliveries (data not presented). Among the states for which sufficient data exist, California led with average charges 22 percent above the U.S. average (Tables 1 and 2). Other states with comparatively high charges were Florida, Connecticut, New York, New Jersey and Massachusetts. No other state experienced costs 10 percent or more above the norm. The charges in Minnesota were the lowest ($2,100), 41 percent lower than the California costs and 28 percent below the national average. Low average charges were also recorded in Iowa (26 percent below the average), Maine (25 percent below), Utah (23 percent lower), Nebraska and New Mexico, 22 and 21 percent below the average, respectively.

Physician Charges

The average physician cost for a normal birth was $1,210 across the country, accounting for just over two-fifths of the average total charge for this delivery. The doctors' fees ranged from being close to one-third of the charges to almost 60 percent of the total bill. The highest physician charge was recorded in New York, where the doctors' fees were 58 percent higher than the U.S. average and more than half (57 percent) of the total delivery cost. The second highest doctors' charges were reported in Florida, where they exceeded the norm by 32 percent. California physician claims were the third highest fees with average charges 31 percent above the norm for the country. In contrast, Minnesota doctors charged $720 for an uncomplicated vaginal delivery. The Minnesota fee was 40 percent lower than the average across the country and 62 percent lower than the fees charged by doctors in New York. Nebraska, Iowa, Maine and Indiana followed with physician fees 30 percent or more below the U.S. average.

Physician charges were the highest in New York ($1,910) and lowest in Minnesota ($720).

The position each state held in relation to total and selected component claims charges is presented in Table 2. The state rankings correspond to those reported for cesarean section claims, which were partially related to medical malpractice insurance premiums.[4,5] For the most part, the relative ranking of the states for the component charges of a normal delivery was similar to the *total* of hospital *and* physician. The notable exceptions were the substantially lower total hospital claims registered in New York and Maryland, and the lower physician claims in Michigan.

Hospital charges accounted for more than half of the total claims submitted for an uncomplicated normal delivery.

Hospital Charges

On average, 58 percent of the total claims submitted to health insurance companies for an uncomplicated normal delivery were attributed to hospital charges (i.e., room and board and ancillary fees). By states, the percentages ranged from highs around two-thirds in Nebraska, Michigan and Minnesota to lows of less than half in New York (43 percent) and 49 percent in Maryland.

Actual total hospital charges averaged $1,690 and differed by as much as 57 percent between states. The hospital charges registered in Alabama were 18 percent above the U.S. average and almost 60 percent above the low charges found in Utah. Michigan, California and Illinois each registered average hospital charges 15 percent or more above the average for the country. Utah, Wisconsin and Arizona were at the other end of the spectrum with total hospital charges more than 20 percent below the average.

Alabama, California and Illinois registered average hospital charges 15 percent or more above the U.S. total.

Ancillary fees (laboratory, X-rays, delivery room charges, etc.) made up 64 percent of the total hospital billing with substantial between-state variations evident. Hospitals in the South charged the highest ancillary fees—Mississippi, Tennessee, Alabama, Arkansas and Georgia each submitted claims for services that ranged between 74 and 79 percent of the hospital bill. Ancillary services charges submitted by New York, on the other hand, were less than half (48 percent) of the total hospital bill.

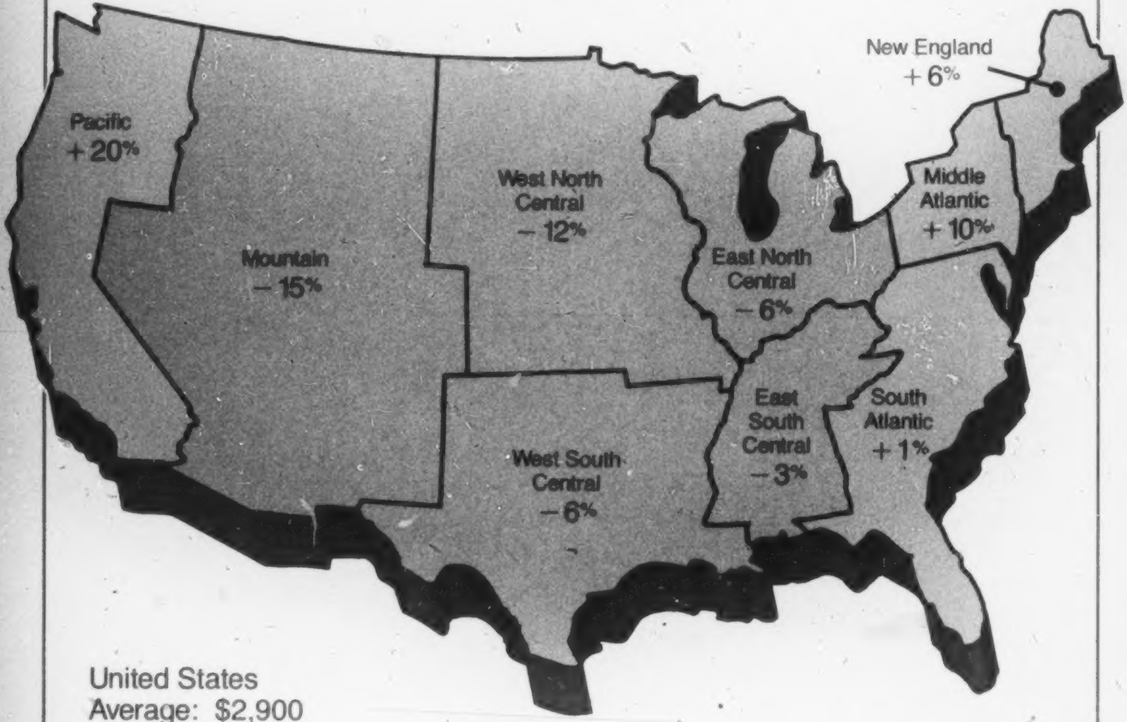
The average length of stay was 2.88 days for women across the country. Stays of 3 days or more were registered in 14 (36 percent) of the 39 states analyzed. Only two states, New Mexico and Arizona, registered average hospital confinements of less than 2 days. As expected, these short hospital stays are reflected in the room and board fees, which were 35 and 28 percent below the norm. Similarly low room and board claims were submitted by Arkansas and Mississippi, where the charges were 42 and 38 percent, respectively, below the U.S. average.

Only two states, New Mexico and Arizona, registered average hospital confinements of less than two days.

The regional variations in charges for an uncomplicated vaginal delivery, described above, are similar to those we have seen in this series of articles and in other national data sets, as well.[2-6] That is, metropolitan areas tend to have higher total and component health care costs than non-metropolitan areas, and the charges for a variety of common surgical procedures are

Metropolitan areas tend to have higher total and component health care costs than non-metropolitan areas.

Figure B — Percent Differences Charges for Uncomplicated Deliveries, Geographic Area vs. United States, 1986


Pacific +20%
Mountain −15%
West North Central −12%
East North Central −6%
New England +6%
Middle Atlantic +10%
West South Central −6%
East South Central −3%
South Atlantic +1%

United States
Average: $2,900

Source: See Table 1.

higher in California than almost any other state. These differences have been attributed to a variety of factors, including the availability of newer and more sophisticated diagnostic and treatment tools, the socioeconomic and demographic composition of the region, medical care consumption preferences, the tendency for greater use of less expensive

Table 2—Standing of States* for Claims Made to Metropolitan Life for Uncomplicated Vaginal Delivery, Selected States, 1986

(Ranked on Total Charges)

	Total Hospital & Physician	Total Hospital	Total Physician
California	1	3	3
Florida	2	8	2
Connecticut	3	9	5
New York	4	32	1
New Jersey	5	6	6
Massachusetts	6	7	7
Washington	7	12	8
Illinois	8	4	14
Alabama	9	1	17
Maryland	10	30	4
Missouri	11	5	15
Pennsylvania	12	11	11
Georgia	13	13	9
Michigan	14	2	33
Tennessee	15	10	22
Louisiana	16	20	10
West Virginia	17	15	20
Oklahoma	18	22	12
Oregon	19	14	19
Ohio	20	16	18
Texas	21	26	13
Kentucky	22	17	21
Virginia	23	24	16
Mississippi	24	19	28
South Carolina	25	18	29
Colorado	26	21	27
Kansas	27	23	32
New Hampshire	28	29	24
Arkansas	29	31	25
North Carolina	30	25	34
Indiana	31	27	35
Arizona	32	37	23
Wisconsin	33	38	26
New Mexico	34	36	31
Nebraska	35	28	38
Utah	36	39	30
Maine	37	35	36
Iowa	38	33	37
Minnesota	39	34	39

* Columns are independently ranked from high to low among the 39 states with 100 or more normal deliveries.
Source: Table 1.

general practitioners in rural areas, and the greater use of specialists in more urban areas and, possibly, to malpractice insurance premiums. (The impact of malpractice insurance premiums for obstetrician/gynecologists continues to receive widespread attention, documentation and debate.[5]) Whatever the reasons, however, the differences in charges are of importance from the twin perspectives of public health education and medical care economics. □

References

[1] Health Insurance Association of America. *1986-1987 Source Book of Health Insurance Data.* Washington, D.C. Public Relations Division of the Health Insurance Association of America, 1987.

[2] The Alan Guttmacher Institute. *The Financing of Maternity Care in the United States.* New York, New York. The Alan Guttmacher Institute, 1987.

[3] U.S. Department of Health and Human Services. *Vital Statistics of the United States, 1985: Volume 1 — Natality.* Hyattsville, Md. Centers for Disease Control, National Center for Health Statistics, 1988.

[4] "Births by Cesarean: Cost Changes, 1980-83 to 1986." *Statistical Bulletin.* 69(3): 18-25, 1988.

[5] Human Resources Division. *Medical Malpractice: Insurance Costs Increased but Varied Among Physicians and Hospitals.* Washington, D.C. U.S. Government Accounting Office, September 1986.

[6] Metropolitan Life Insurance Company. "Costs of Common Surgical Procedures by State." *Statistical Bulletin.* Monograph of 1985/1986 article, New York. Metropolitan Life, 1987.

STATISTICAL INFORMATION, PLEASE

Q *How many persons in the United States are hearing impaired, and what is the age/sex breakdown of this group?*

A Hearing loss is the most prevalent of all impairments. An estimated 20.7 million persons had some trouble hearing in one or both ears, according to the latest National Health Interview Survey (1986).

The data only cover persons in the noninstitutionalized population. It is estimated that the prevalence of hearing impairment among the institutionalized population, e.g., nursing home residents, prison inmates, mentally retarded, etc., is higher than among the noninstitutionalized. The following table shows the 1986 distribution of hearing-impaired persons by age and sex.

Hearing-Impaired Persons in the U.S. Population,* 1986

	Number (1,000s)			Percent Distribution			Rate per 1,000 Persons			
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Male/Female
All Ages	20,732	11,727	9,005	100.0	100.0	100.0	87.7	102.6	73.8	1.4
Under 45	6,502	3,678	2,824	31.3	31.4	31.4	39.6	45.0	34.3	1.3
45-64	6,089	3,835	2,254	29.4	32.7	25.0	136.2	180.0	96.4	1.9
65 & Over	8,141	4,214	3,927	39.3	35.9	43.6	295.6	371.0	242.7	1.5

*Includes only persons in the civilian noninstitutionalized population.

Source: National Center for Health Statistics, current estimates from the National Health Interview Survey, United States, 1986, Vital and Health Statistics, Series 10, No. 164, 1987.

* *

Q *What is the difference between age dependency ratio and economic dependency ratio?*

A The age dependency ratio is a reflection of the age distribution of a population, not of economic dependency. Thus, the age dependency ratio represents the ratio of working age people to traditional nonworking age persons. For example, in many developed countries, this ratio is expressed as the number of people under age 18, plus those 65 or over, divided by the number aged 18-64. The economic dependency ratio may be defined as the ratio of the economically inactive population of all ages to the active population of all ages—nonworkers to workers. The not economically active comprise homemakers, students, and others.

Please send your questions to: Statistical Information Editor
Health and Safety Education Division, Dept. SB
Metropolitan Life Insurance Co.
One Madison Avenue
New York, NY 10010-3690

SB
STATISTICAL BULLETIN

Contents & Index—1988

Contents

VOL. 69

JAN – MAR

Page

From the Editor's Desk 1
Trends in Medical Care Costs 2
Commentary: The Medical Care Cost Dilemma 9
Multiple Births: An Upward Trend in the United States 10
Capsule Briefs 16
Women's Longevity Advantage Declines 18
Variations in Mortality From Gastric Cancer 24
Statistical Information, Please 31
Historical Perspectives .... Back Cover

APR – JUN

From the Editor's Desk 1
Infant Mortality, 1986: National and International Differences 2
Commentary: A Test of Compassion 9
Older Americans' Health 10
Commentary: The Challenge of an Aging Population 17
Capsule Briefs 18
Costs of an Appendectomy: Regional Variations 20
Population Slowdown in the United States 27
Statistical Information, Please 35
Historical Perspectives .... Back Cover

JUL – SEP

From the Editor's Desk 1
The Changing Picture in Retiree Economics 2
Commentary: Future Financial Security 9
New Longevity Record in the United States 10
Capsule Briefs 16
Births by Cesarean: Cost Changes, 1982-83 to 1986 18
Trends and Regional Differences in Breast Cancer Mortality 26
Jacob Baar: An Appreciation 31
Statistical Information, Please 32
Historical Perspectives .... Back Cover

OCT – DEC

From the Editor's Desk 1
Hispanic Americans: An Emerging Group 2
Commentary: A Common Language, A Diverse People 13
Capsule Briefs 14
Health Insurance of Women of Childbearing Age: United States, 1985 16
Costs of Normal Births: Regional Variations, 1986 25
Statistical Information, Please 33
Contents and Index: 1988 34
Historical Perspectives .... Back Cover

Index

Statistical Bulletin 1988

Issue Page

A

Appendectomy
  by region and age, U.S., 1986 Apr-Jun 20
  cases by age and sex, 1986 Apr-Jun 20
  geographic variation in average charges, 1986 Apr-Jun 20

B

Births, cesarean
  changes in average charges, 1982-83 to 1986 Jul-Sep 18
  geographic variation in average charges, 1986 Jul-Sep 18

Births, multiple
  by age of mother, U.S., 1980 and 1985 Jan-Mar 10
  by plurality, by race, U.S., 1960-85 Jan-Mar 10
  by race of child and age of mother, U.S., 1985 Jan-Mar 10

Births, normal
  geographic variation in average charges, 1986 Oct-Dec 25
  state rankings in average charges, 1986 Oct-Dec 25

C

Cancer, breast
  mortality rates, by age, 1979-81 and 1985 Jul-Sep 26
  state rankings in age-adjusted mortality rates, 1985 Jul-Sep 26
  trends and regional differences in deaths, women aged 35-74, U.S., 1979-81 and 1985 Jul-Sep 26

Cancer, gastric
  deaths by region and sex, ages 45-84, U.S., 1979-81
  mortality rates by age and sex 1979-81 Jan-Mar 24

Charges (average), appendectomy
  regional variations, 1986 Apr-Jun 20

Charges (average), cesarean births
  regional variations, 1982-83 to 1986 Jul-Sep 18

Charges (average), normal births
  regional variations, 1986 Oct-Dec 25

Costs, medical care
  changes in selected items, U.S., 1981 to 1986, with projections to 1988 Jan-Mar 2
  national health expenditures, U.S., 1940 to 1987 Jan-Mar 2

Issue Page

  personal health care, total expenditures, U.S., 1976 to 1986 Jan-Mar 2
  sources of funds, U.S.,1986 Jan-Mar 2
  regional changes in goods and services, 1983 and 1987 Jan-Mar 2
  trends and inflation, U.S., 1977 to 1987 Jan-Mar 2
  The Medical Care Cost Dilemma (Commentary) Jan-Mar 9

D

Deaths
  cancer, breast, trends and regional differences, women aged 35-74, U.S., 1979-81 to 1985 Jul-Sep 26
  cancer, gastric, men and women, aged 45-84, U.S., 1979-81, by region Jan-Mar 24
  infants, national and international differences, 1986 Apr-Jun 2
  rates by race, U.S., 1940 to 1985 Apr-Jun 2
  rates in selected countries, 1960 and 1986 Apr-Jun 2
  rates, region, U.S., 1984 to 1986 Apr-Jun 2
  states with highest and lowest rates, 1986 Apr-Jun 2
  sex ratio, from leading causes, by age, U.S., 1985 Jan-Mar 18
  by age and race, U.S., 1985 Jan-Mar 18
  by age, U.S., 1900 to 1986 Jan-Mar 18

Diseases: See specific disease.

E

Expectation of life
  at single years of age, race and sex, U.S., 1985 Jul-Sep 10
  by age and sex, U.S., 1900 to 1986 Jan-Mar 18
  chances of surviving to a specified age, 1900-02 to 1987, U.S., by age and sex Jul-Sep 10
  See also Survivorship.

H

Health insurance
  insurance coverage of women aged 15-44
  by age and marital status, U.S., 1985 Oct-Dec 16
  by occupation and marital status, U.S., 1985 Oct-Dec 16
  women aged 15-44 without insurance or on Medicaid, by region, by race, by education, by poverty status Oct-Dec 16

Issue Page

Health status
  older Americans,
    self assessment and activity limitations, U.S., 1983-84 Apr-Jun 10
Hispanics: See Population, Hispanic.

I
Infant mortality
  national and international differences, 1986 Apr-Jun 2
  provisional rates per 1,000 live births, 1986
  rates by race, U.S., 1940 to 1985 Apr-Jun 2
  regional rates per 1,000 live births, 1984, 1985 Apr-Jun 2
  A Test of Compassion (Commentary) Apr-Jun 9
  See also Deaths.

L
Life tables
  U.S., age, race, sex, 1985 Jul-Sep 10
Longevity: See Expectation of life.

M
Men
  expectation of life, by age, U.S., 1900 to 1986 Jan-Mar 18
  sex ratio of mortality by age, U.S., 1900 to 1986 Jan-Mar 18
  from leading causes of death, U.S., 1985 Jan-Mar 18
Metropolitan Life Insurance Company
  regional distribution and average charges of procedures among persons insured by,
    appendectomy, 1986 Apr-Jun 20
    cesarean birth, 1982-83, 1986 Jul-Sep 18
    normal birth, 1986 Oct-Dec 18

O
Older Americans
  reported impairments by type of impairment, sex, and age, U.S., 1982-84 Apr-Jun 10
  self assessment of health status and activity limitation due to chronic conditions, ages 65 and over, by race, sex and age, U.S., 1983-84 Apr-Jun 10
  The Challenge of An Aging Population (Commentary) Apr-Jun 17
  See also Retiree economics.

P
Population, Hispanic
  by type of origin, March 1987 Oct-Dec 2
  educational attainment, U.S., March 1987 Oct-Dec 2
  estimates and projections, by age, U.S., 1982-2025 Oct-Dec 2
  selected characteristics, by type of Hispanic origin, U.S., March 1987 Oct-Dec 2
  total and Hispanic population, selected states, U.S., 1970-1987 Oct-Dec 2
  A Common Language, A Diverse People (Commentary) Oct-Dec 13
Population, U.S. total
  by age, 4/1/80 and 1/1/87 Apr-Jun 27
  by geographic area, 1/1/77-1987 Apr-Jun 27
  estimates, 1970-1987 Apr-Jun 27

R
Retiree economics
  participation by type of private pension plan, U.S., 1975-1985 Jul-Sep 2
  savings rate, U.S., 1973-1987 Jul-Sep 2
  trends in income replaced by Social Security Jul-Sep 2
  Future Financial Security (Commentary) Jul-Sep 9

S
Sex ratio, mortality, U.S.
  by age, 1900-1986
  by age and leading causes, 1985 Jan-Mar 18
Social Security
  earnings of retired workers replaced by, U.S., 1950 to 1986 Jul-Sep 2
  problems, projections to 2025 Jul-Sep 2
Survivorship
  chances of, from birth to specified ages by sex, U.S., 1900 to 1987 Jul-Sep 10
  See also Expectation of life.

W
Women
  breast cancer deaths, trends and regional differences, U.S., 1979-81 and 1985 Jul-Sep 26
  expectation of life, by age, U.S., 1900 to 1986 Jan-Mar 18
  gastric cancer deaths, U.S., rates, 1979-81 Jan-Mar 24
  health insurance of women of childbearing age, U.S., 1985 Oct-Dec 16
  multiple birth trends, 1980-1985 Jan-Mar 10
  sex ratio of mortality by age, U.S., 1900 to 1986 Jan-Mar 18
  from leading causes of death, U.S., 1985 Jan-Mar 18

Coming in Future Issues

- Trends in Cardiovascular Mortality by State, Age and Sex
- Common Surgical Procedures: Increases in Charges
- Population Profile: Children Under Age 18
- Trends in Medical Care Costs

Historical Perspectives

60 YEARS AGO

IN THE 1928 STATISTICAL BULLETIN

Metropolitan Life statisticians published an historical retrospective of various international life tables covering specific periods in the intervals between 1687-91 and 1925. These life tables revealed that in about the middle of the 19th century expectation of life at birth for the population in the United States and England and Wales was about 40 years. By 1925 the life expectancy at birth had risen by some 19 years to about 59 years. At the older ages, however, the increases in life expectancy during the period were smaller —ranging from a gain of 8 years for a child aged 10 and continued decreasing throughout the older ages. The gains at birth were accomplished through reduction of mortality from diarrheal and communicable childhood diseases. In early adult life, gains were mainly attributed to the reduction in mortality from tuberculosis and typhoid. Since the degenerative diseases of the older ages were still unchecked, they did not feature in the gains in life expectancy. (Page 5, March)

The 1914-23 death rate among the hospitalized psychiatric population in New York State was seven times that of the state's general population. The disparity in death rates was greatest during adolescence, particularly among females where the difference was 20 times that of the normal population. Metropolitan Life statisticians advocated compiling statistics on deaths from each important cause by psychoses, sex and age so as to be able to construct mortality tables for persons with mental diseases. They emphasized that regardless of detailed statistics, it was already well established that the life of the "insane" was dramatically curtailed, possibly by as much as one half. However this knowledge would be of great importance not only to medical science, but also to those who had to plan for the care of the mentally ill. (Page 1, May)

A study of smallpox cases in selected areas of the United States and Canada showed 3,811 new cases reported in 1927 over 1926, bringing the total to almost 40,000. Louisiana and Quebec recorded the highest case-fatality rates. There were major fluctuations from year to year in the number of cases and the severity of the disease. Good years gave a false sense of security that the disease was being controlled. Met Life statisticians pointed out that only vaccination would protect against smallpox, yet large segments of the American and Canadian population were not yet vaccinated. (Now smallpox has been eradicated worldwide; the last naturally transmitted case was in Merka, Somalia, in 1977.—Ed.) (Page 3, May)

Attention was focused on the continued rise in the rate of motor vehicle fatalities. Analysis of death rates among Met Life Industrial policyholders showed that between 1911 and 1927 the rate increased eightfold from [illegible] per 100,000 to 18.6 per 100,000. In 1927 there were about 3,366 motor vehicle fatalities involving Met Life Industrial policyholders. Statisticians estimated that from 35 to 40 percent of these were among children under 15 years, with the greatest concentration between ages 5-10. In 1927 almost as many wage-earners' children lost their lives from auto accidents as from measles, scarlet fever and whooping cough combined. (In 1987 there were 49,000 motor vehicle fatalities, with the major concentration —over 60 percent—at ages 15-44 years.—Ed.) (Page 8, January)

In a continuing study of the monetary value of human life in 1928, Metropolitan Life statisticians estimated the annual dollar costs of premature death for various conditions. Premature death was found to be a serious source of family disruption and income loss. Tuberculosis, originally causing the greatest drain on the economy because of its youthful victims, was being controlled. Cancer, another source of premature death, was increasing; therefore, focus was on income loss caused by this disease. Costs associated with loss of income, nursing care and medicine were estimated to be as much as $800 million in 1927. Met Life statisticians emphasized that cancer deaths were a serious economic waste and that dedicated research was necessary to bring the disease under control and prevent further deaths. (Currently there are about 480,000 cancer deaths annually with a mortality rate of about 196 per 100,000. The social costs of cancer were estimated at $71.5 billion in 1986.—Ed.) (Page 5, April)